DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND, HAWAII
400 MARSHALL ROAD
JBPHH, HAWAII 96860-3139

5720
Ser EV3/00372
August 22, 2023

Mr. Pat Elder
17841 Rosecroft Rd.
Lexington Park, MD 20653

Dear Mr. Elder:

SUBJECT: FOIA REQUEST (DON-NAVY 2023-010838)

This letter is in response to your request under the Freedom of Information Act (FOIA), assigned tracking number DON-NAVY-2023-010838, assigned to Naval Facilities Engineering Systems Command, Hawaii for the "DRAFT PRELIMINARY ASSESSMENT POTENTIAL PER- AND POLYFLUOROALKYL SUBSTANCES SITES MARINE CORPS BASE HAWAII OAHU HI CAMP H. M.".

There are a total of 160 pages provided in their entirety as responsive to your request. In accordance with Navy policy, all fees have been waived.

You have the right to an appeal. It must be received (i.e., post-marked) within 90 calendar days from the date of this letter. Please provide the appellate authority (see below) the following in an envelope marked "FOIA appeal":

- a letter requesting an appeal that explains what you are appealing with any supporting arguments or reasons you think may be worthy of consideration;
- a copy of your initial request;
- a copy of the letter of denial.

Also, please provide me a copy of your appeal letter at FOIA Officer, NAVFAC Hawaii 400 Marshall Rd., JBPHH, HI 96860.

Please send your appeal to the following email address: DONOGCAPPEALS@us.navy.mil; or by mail to:

Department of the Navy,
Office of the General Counsel, 1000 Navy Pentagon, Room 5A532 Washington, DC 20350-1000

If you have any questions, please contact the FOIA coordinator at kelly.a.rickard.civ@us.navy.mil. You may also contact the DON FOIA Public Liaison, Christopher Julka, at christopher.a.julka@navy.mil, (703) 697-0031. In addition, the Office of Government Information Services (OGIS) provides a voluntary mediation process for resolving

disputes between persons making FOIA requests and the Department of the Navy (DON). For more information, go to https://www.archives.gov/ogis/about-ogis/contact-information.

Sincerely,

S. A. SAEPOFF, P.E.
Environmental Restoration
Product Line Coordinator
By direction of the
Commanding Officer

Enclosure: 1. Responsive Records

Naval Facilities Engineering Systems Command Hawaii
JBPHH HI

Revised Draft

Preliminary Assessment Potential Per- and Polyfluoroalkyl Substances Sites

MARINE CORPS BASE HAWAII AND ASSOCIATED FACILITIES OAHU HI

KANEOHE BAY HI MCB SITE 4, BASEWIDE
CAMP H. M. SMITH OAHU HI BASEWIDE

March 2021

Naval Facilities Engineering Systems Command Hawaii
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March 2021

Prepared for NAVFAC Hawaii by
AECOM Technical Services Inc
1001 Bishop Street Suite 1600
Honolulu HI 96813-3698

N62742-12-D-1829
CTO 0044

EXECUTIVE SUMMARY

PRELIMINARY ASSESSMENT

A base-wide preliminary assessment was conducted to identify and evaluate sites potentially impacted by per- and polyfluoroalkyl substances (PFAS) releases at Marine Corps Base Hawaii (MCBH) and at associated annexes including Marine Corps Base Camp H. M. Smith, Manana Housing, Marine Corps Training Area Bellows (MCTAB), and Puuloa Range Training Facility. The primary purpose of the preliminary assessment was to identify areas that may have been impacted by historic and/or current use of aqueous film-forming foam (AFFF) or other PFAS-containing products, and to make prioritized recommendations as to which sites will be investigated in a site inspection (SI).

To enable site inspection prioritization, four groups were created to group sites based on the likelihood of PFAS being present and/or entering the environment, and sites with known prior presence of PFAS storage or use were assigned to one of the four groups. The groups are:

- *Group A:* Known large-quantity release sites (fire suppression for crashes, hangar tests) or repeated small quantity release sites (fire training area), occurring between the mid-1960s to approximately 2010, where AFFF suppressants known to have contained PFAS were documented to have been used. Group A sites are considered the most likely to have impacted the subsurface soil and/or groundwater, and were the sites with the highest priority for selection for continued study during the SI phase of the project.
- *Group B:* Potential release sites, including areas where AFFF suppressants known to have contained PFAS were documented to have been stored with poor management practices but not deployed on the ground (fire stations, hangars, flight lines, runways, AFFF handling/storage areas).
- *Group C:* Electro-plating facilities that may have utilized vapor suppressants containing PFAS.
- *Group D:* Potential other secondary sources of PFAS releases (areas where compounds containing PFAS were not intentionally released onto the ground surface, including landfills, sludge disposal areas, and oil-water separators) or were stored using good management practices. These areas may have been impacted by the disposal or runoff of AFFF containing PFAS.

Active ranges will be evaluated for potential PFAS impacts under a separate project.

For this project, only sites identified as Group A or B will be recommended for further evaluation including an SI.

Sites were identified as Group A, B, C, or D through a screening process which included a key word search for buildings and facility maps, document review, visual SIs, and personnel interviews. The results of the screening process are summarized in Table ES-1. Ten sites were identified as potential Group A through D sites; 14 sites did not meet the criteria for a Group A through D site and were subsequently excluded from further evaluation. Seven of the potential sites identified are located at the main MCBH installation; one site was identified at Camp H. M. Smith; one site was identified at MCTAB; and one site was identified at Manana Housing.

Table ES-1: Sites Evaluated and Findings

Installation	Building No./ Location	Description	Approach	AFFF?	Findings	Assigned Group
Camp H. M. Smith	612	Fire Station #16	Phone Interview	Y	110 gallons of AFFF located on 2 trucks; no off-truck storage and no known releases. The Federal Fire Department stated that AFFF is refilled at this fire station. A number of grassy areas surround the fire station where AFFF could infiltrate.	B
Manana Housing	68	Fire Station #5	Phone Interview	Y	AFFF located on 2 trucks. No grassy areas; fire station only includes concrete parking area.	D
MCBH Kaneohe Bay	1617	Fire Fighting Training Area	Document Review, Building Survey, Visual Inspection	Y	Used AFFF, per 1990 FFTA SI Report.	A
	4074	Fire Station #8	Building Survey, Interview, Visual Inspection	Y	Station has three trucks with 70 gallons of AFFF each, portable hose-drying rack located in grassy area, and 5-gallon containers of AFFF stored at the fire station. Potential AFFF release during hose-drying.	B
	5068	Crash Crew Storage	Building Survey, Visual Inspection	Y	AFFF stored is various years and manufacturers, early as 1988.	B
	5069	CCH	Building Survey, Interview, Visual Inspection	Y	AFFF has gone off in last year.	A
	6082	Storage/ outdoor pallet of AFFF	Building Survey, Visual Inspection	Y	Storage of AFFF with no known/documented AFFF releases.	D
	6822	Crash Crew Headquarters	Building Survey, Visual Inspection	Y	Has AFFF stored at building.	B
	N/A	Runways	Building Survey, Visual Inspection	Y	AFFF used in crash response; no current records of crashes from 2010 to present.	B
Marine Corps Training Area Bellows	Landing Zone Gull	Helicopter landing zone/ area of MV-22 hard landing mishap	Site Visit	Y	AFFF was used to extinguish aircraft fire.	A [a]

AFFF aqueous film-forming foam
CCH corrosion control hangar
FFTA fire fighting training area
N/A not applicable
no. number
[a] Landing Zone Gull was identified and is being evaluated as part of a separate project.

Of the 116 sites (see Table 2-1) evaluated, two sites were identified as Group A and five as Group B. No sites were identified as Group C and two sites were identified as a Group D site at MCBH and Manana Housing. Based on the potentially complete exposure pathways determined in the conceptual

site model for Group A and B sites, a SI with confirmation sampling is recommended to further evaluate the presence/absence of PFAS in surface soil, subsurface soil, and groundwater. PFAS have not been previously evaluated at the sites. The following sites are recommended for SIs:

- Group A sites:
  - MCBH Building (Bldg.) 1617 Fire Fighting Training Area
  - MCBH Bldg. 5069 Corrosion Control Hangar
  - MCTAB Landing Zone Gull (site of MV-22 hard landing mishap; being evaluated under a separate project)
- Group B sites:
  - Camp H. M. Smith Bldg. 612 Fire Station #16
  - MCBH Bldg. 4074 Fire Station #8
  - MCBH Bldg. 5068 Crash Crew Storage
  - MCBH Bldg. 6822 Crash Crew Headquarters
  - MCBH Runways

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APPENDIXES

FIGURES

TABLES

ACRONYMS AND ABBREVIATIONS

AFFF	aqueous film-forming foam
AOC	area of concern
ARFF	aircraft rescue and firefighting
AST	aboveground storage tank
bgs	below ground surface
Bldg.	building
CCH	corrosion control hangar
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COPC	chemical of potential concern
CSM	conceptual site model
FFTA	fire fighting training area
LZ	Landing Zone
MCBH	Marine Corps Base Hawaii
MCTAB	Marine Corps Training Area Bellows
Navy	Department of the Navy, United States
no.	number
PA	preliminary assessment
PFAS	per- and polyfluoroalkyl substances
SI	site inspection
VSI	visual site inspection

1. Introduction

A base-wide preliminary assessment (PA) was conducted to identify and evaluate sites potentially impacted by per- and polyfluoroalkyl substances (PFAS) releases at Marine Corps Base Hawaii (MCBH), Oahu, Hawaii, and at associated annexes including Marine Corps Base Camp H. M. Smith, Manana Housing, Marine Corps Training Area Bellows (MCTAB), and Puuloa Range Training Facility (Figure 1-1). The primary focus of the PA was to identify areas that may have been impacted by historic and/or current use of aqueous film-forming foam (AFFF) or other PFAS-containing products, and to make prioritized recommendations as to which sites will be investigated in a site inspection (SI).

This PA was prepared for the Hawaii Division, Naval Facilities Engineering Systems Command under the Comprehensive Long-Term Environmental Action Navy Program, contract number (no.) N62742-12-D-1829, contract task order no. 0044.

The guidance for the PA process under Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) states that it is not equally applicable to all sites and all substances and that variation from the guidance may be necessary. Sites containing PFAS are an example where the generic CERCLA process is partially applicable. Certain elements of this report are tailored to address the unique aspects of PFAS, while generally following the CERCLA guidance.

1.1 PURPOSE

This PA was prepared to identify areas at MCBH that may have been impacted by the release of PFAS and to identify sites most likely impacted by suspected PFAS releases for further investigation via SIs. The SIs will evaluate whether PFAS have been released and are present in soil and/or groundwater.

PFAS are classified by the United States Environmental Protection Agency as emerging contaminants that were released into the environment from industrial and firefighting activities. PFAS are used in the manufacturing of intermediary products and hundreds of articles of commerce in electronics, aerospace/defense, building/construction, alternative energy, automotive, semiconductors, military, healthcare, outdoor apparel/equipment, chemical/pharmaceutical manufacturing, and most notably in AFFF used for fire training and firefighting. On MCBH, PFAS may have been released during the use of certain AFFF fire suppressants at fire training areas, aboveground storage tanks (ASTs) containing AFFF, hangers with permanent fire suppression systems containing AFFF, areas of known fuel fire responses, and at landfills, metal plating facilities, aircraft and vehicle maintenance facilities, and fire stations.

This PA identifies potential historical sites where compounds containing PFAS may have been used and/or released. A major use of PFAS compounds were in the manufacturing of selected AFFF fire suppressants from approximately 1949 to 2010. AFFF manufactured during this period may have been stored and utilized after 2010. PFAS compounds are also present in many water-resistant, stain-resistant, and stick-resistant products. The PA investigated potential sources of AFFF and other potential sources of PFAS on MCBH and its annexes.

The PA was conducted to (1) identify areas at MCBH and associated annexes that may have been impacted by the release of compounds containing PFAS (especially AFFF); (2) identify which areas will need to investigated further; and (3) prioritize each area identified for further investigation based on its likelihood to have impacted the surrounding soil and groundwater.

This information was accomplished through a compilation and evaluation of data through three primary tasks:

- A review of facility maps and indexes
- A review of records and previous investigations
- Interviews with environmental and other installation staff
- Site reconnaissance of areas that may have been impacted by PFAS based on historical records/site use/oral interviews

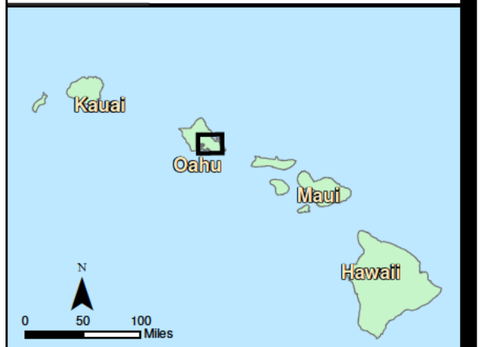
1.2 REPORT ORGANIZATION

This PA report is organized as follows, with all appendices provided on compact discs.

- *Section 1:* Introduction and purpose of this report, approach for conducting the PA, and an outline of the PA report.
- *Section 2:* Methodology used to identify and group sites potentially impacted by PFAS.
- *Section 3:* Site background information, including a site history and a description of the physical characteristics of the property, including topography and drainage, soils and geology, groundwater hydrogeology, surface water hydrology, vegetation and wildlife, and potential receptors and migration pathways.
- *Section 4:* Summary and recommendations for sites that are most likely impacted by PFAS.

Supporting information and documentation is provided in the following appendices:

- *Appendix A:* Building Screening Tables`
- *Appendix B:* Interviews
- *Appendix C:* Photo Logs
- *Appendix D:* Visual Site Inspection Logs (Field Logbook)
- *Appendix E:* Response to Comments



LOCATION MAP

LEGEND

- MCBH Kaneohe Bay
- Marine Corps Training Area Bellows
- Manana Housing
- MCB Camp Smith
- Puuloa Range Training Facility

NOTES

1. Basemap is ArcGIS ESRI Imagery
2. Map projection is Hawaii State Plane 4, NAD 1983

Acronyms and Abbreviations
- MCB Marine Corps Base
- MCBH Marine Corps Base Hawaii
- PFAS Per- and polyfluoroalkyl substances

N

0 7,500 15,000 Feet

Figure 1-1
Site Location
Preliminary Assessment
Potential PFAS Sites
Marine Corps Base Hawaii,
Oahu, Hawaii

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2. Preliminary Assessment Methodology

Prior to evaluating site-specific information, the PA compiled a list of chemical compounds, manufacturing, and surface treatments utilizing PFAS, and commonly known release mechanisms for PFAS, as summarized below.

- *Manufacturing:* PFAS are synthetic compounds used in a diverse range of manufacturing processes, but no manufacturing facilities were identified at MCBH or its annexes.
- *Surface Treatments:* PFAS compounds are utilized in a broad range of surface treatments including clothing (rain gear), shoes (waterproof boots), non-stick cookware (coated with Teflon), Gore-Tex™ and related textiles, Scotchgard™, food packaging with waterproof linings, and fluoroelastomers (gaskets, O-rings, and hoses). Most of these applications have the greatest potential impact during manufacturing, not during consumer or end-use. None of these PFAS applications were identified as warranting evaluation during the PA.
- *Performance Chemicals:* PFAS are used in the manufacturing of performance chemicals, including mining and oil surfactants; metal plating baths, including chromium plating; insecticides; the manufacturing of lubricants; and in AFFF, which is used to extinguish fuel fires. Of these, AFFF is typically the largest concern on military installations and at airports, as it is commonly used for both fire responses as well as at fire training areas on a regular basis. Fire training areas where AFFF was used are assumed to have potential impact to soil and/or groundwater. One fire training area was identified at MCBH. AFFF is also present in some fixed fire suppression systems such as those installed at older aviation hangars. One hangar with an AFFF fire protection system was identified at MCBH. AFFF was stored at a storage shed at MCBH and at the MCBH fire station. Metal plating baths are also potentially present at military installations, although none were identified at MCBH.

This information, along with additional research on PFAS use, was used to create a list of key words for screening records of building names and activities to identify those areas potentially impacted by PFAS which are listed in Section 2.2.1.

2.1 SITE GROUPS

To enable site prioritization, four groups were created to group sites based on the likelihood of PFAS being present and/or entering the environment. Sites identified as Group A or Group B will be recommended for further evaluation including an SI. The groups are as follows:

- *Group A:* Known large quantity release sites (fire suppression for crashes, hangar tests); or repeated small quantity release sites (fire training area), occurring between mid-1960s to approximately 2010, where AFFF suppressants known to have contained PFAS were documented to have been used. Group A sites are considered the most likely to have impacted the subsurface soil and/or groundwater, and were the sites with the highest priority for selection for continued study during the SI phase of the project.
- *Group B:* Potential release sites, including areas where AFFF suppressants known to have contained PFAS were documented to have been stored, but not deployed on the ground (fire stations, hangars, flight lines, runways, AFFF handling/storage areas). Group B sites have the second highest priority for continued study and will also be included in the SI phase of the project.

- *Group C:* Electro-plating facilities that may have utilized vapor suppressants containing PFAS. Group C sites will not be included in the SI phase of this project.
- *Group D:* Potential other secondary sources of PFAS releases (areas where compounds containing PFAS were not intentionally released onto the ground surface, including landfills, sludge disposal areas, oil-water separators). These areas may have been impacted by the disposal or runoff of AFFF containing PFAS and will not be included in the SI phase of this project.

2.2 APPROACH

Sites potentially impacted by PFAS releases were identified as Group A, B, C, or D through a screening process which included a key word search for building records and facility maps, document review, visual SIs (VSIs), and personnel interviews. Details of each component of the screening process are provided below.

2.2.1 Building List Screening/Facility Maps and Indices

A base facilities list was reviewed for MCBH Kaneohe Bay and each associated annex to identify facilities where AFFF may have been used or stored. Five lists (one for each annex), with a total of 1261 base facilities, were screened to identify facilities where AFFF may have been used. The building/facility list for each installation/annex included descriptions that indicated the use of each building, and the building use names were filtered using the keywords below. It was assumed that housing and administrative facilities would not use significant quantities of AFFF chemicals; therefore, Manana Housing annex was eliminated from further investigation.

The following list of key words/phrases was used to identify areas/sites that may have been impacted by PFAS based on their use:

- AFFF storage
- Aircraft maintenance facilities
- Aircraft/vehicle crash/fire site
- Biosolids application areas (sewage solids/sludge)
- Chemical manufacturing facilities
- Chrome/electroplating facilities
- Docks/piers
- Dry docks
- Fire stations/departments
- Fire training areas
- Hazardous material/waste storage
- Hangars
- Landfills
- Refineries
- Runways
- Shipyards

- Tanks (ASTs/underground storage tanks)/fueling racks/bulk fuel storage terminals
- Vehicle maintenance shops
- Warehouse

Facility maps and historical imagery for MCBH, Camp H. M. Smith, and MCTAB were also reviewed to determine whether any non-numbered features (e.g., runways), were present that may have been associated with prior use of compounds containing PFAS. Using the key words identified above, no facilities were identified for Puuloa Range Training Facility; subsequently, this annex was removed from further investigation. Screening tables are in Appendix A.

2.2.2 Document Review

Since PFAS are emerging chemicals, prior investigations at MCBH have not addressed, discussed, and/or tested for these chemicals of potential concern (COPCs). Selected prior environmental investigation reports for MCBH were screened to determine whether sites, such as fire training areas, were previously investigated for other COPCs and whether documentation was found noting the use/release of AFFF suppressants.

Information regarding site conditions, previous investigations, and site recommendations was obtained from the *Initial Assessment Study of Marine Corps Air Station Kaneohe Bay, Hawaii* (NEESA 1984), which identified and detailed the historic use of AFFF at the Fire Training Area.

Information regarding the MV-22 mishap was obtained from the *Final Cleanup Report, Environmental Response Actions at MV-22 Mishap Site Marine Corps Training Area Bellows, Oahu, Hawaii* (DON 2016), which identified approximately 130 gallons of AFFF used by the Federal Fire Department and approximately 5.25 gallons of AFFF used by the Honolulu Fire Department. Fire suppressants included Ansulite 3 percent AFFF, Centurion 3 percent AFFF by National Foam, and Chemguard First Class FC. The MV-22 tiltrotor aircraft involved in the mishap was attempting to land at the northeastern end of Landing Zone (LZ) Gull when the mishap occurred. The presence of PFAS in the AFFF used at the site was not confirmed at the time of the evaluation.

2.2.3 Personnel Interviews

Personnel interviews were conducted for key portions of MCBH and Camp H. M. Smith to determine whether detailed records or information was available to document the use/release/storage of products that may have contained PFAS. Personnel interview forms are included in Appendix B.

In March 2016, following document review and obtaining the building list, AECOM Technical Services, Inc. personnel visited the MCBH buildings identified where AFFF may have been discharged or stored (Figure 2-1). Most personnel interviewed had been working on MCBH for an extended period of time (greater than 10 years) (Appendix B). Useful information on historical activities, discharge events, and storage locations was obtained from interviews and site reconnaissance (Appendix D).

Fire Captain, Fire Station #8, MCBH: The Fire Captain for Fire Station #8 identified Fire Training Areas and hangars on MCBH and stated that the facilities at Building (Bldg.) 242 should be checked for potential sources. He indicated that the Crash Crew at Bldg. 6822 would know where crashes have occurred. The Fire Captain identified Bldg. 5069 as the only building with a permanent fire suppression system. Each of the three fire trucks located at Fire Station #8 contain approximately 70 gallons of AFFF.

Fire Captain, Fire Station #16, Camp H. M. Smith: The Fire Captain for Fire Station #16 stated that there are empty containers of AFFF and 30 gallons in reserve. He also stated that there are two trucks that carry a total of approximately 110 gallons. During a follow-up interview in June 2018, he also stated that the reserve was moved to Bldg. 1556 at Pearl Harbor, and no foam releases have occurred around the fire station.

Engineer, Fire Station #5, Manana Housing, Pearl City: An engineer for Fire Station #5 stated that AFFF is located on the one truck present at the station. Also, he stated that there has been no separate storage of AFFF at the fire house within the last 10 years. He confirmed that there was no foam testing or release of any foam around the fire house.

Locations identified as potential PFAS sites were visited to create a photographic record, identify key site features, confirm potential AFFF use, conduct initial planning to determine feasible sampling strategies, and determine whether existing groundwater monitoring wells are already present in the areas. Site photographs are included in Appendix C.

2.2.4 Visual Site Inspections

A VSI was conducted at each site identified as currently storing AFFF or historically discharging AFFF. The purpose of the limited VSI was to identify surface features and areas where the AFFF runoff/discharge/application would have had the greatest impact. The VSI was also used for identifying areas where sampling may need to occur. The buildings surveyed as part of the VSI are:

- MCBH Kaneohe Bay
  - Bldg. 101 Hangar 1
  - Bldg. 102 Hangar 2
  - Bldg. 103 Hangar 3
  - Bldg. 104 Hangar 4
  - Bldg. 105 Hangar 5
  - Bldg. 373 Housing Warehouse
  - Bldg. 375 Maintenance Hangar
  - Bldg. 1252 AST Farm
  - Bldg. 1617 Fire Training Pit
  - Bldg. 4074 Fire Station #8
  - Bldg. 5055 Chemical Storage/Waste Collection
  - Bldg. 5068 Crash Crew Storage
  - Bldg. 5069 Corrosion Control Hangar (CCH)
  - Bldg. 6407 Hazmat Storage Facility
  - Bldg. 6471 Fire Pump Building
  - Bldg. 6474 Hazardous Materials/Hazardous Waste Facility
  - Bldg. 6697 Corrosion Repair Facility

  - Bldg. 6822 Crash Crew Headquarters
  - MCBH Runways

The locations of the buildings where VSIs occurred are shown on Figure 2-1. The building survey confirmed usage and/or storage of PFAS containing materials at the following locations:

- MCBH Kaneohe Bay
  - Bldg. 1617 Fire Training Pit
  - Bldg. 4074 Fire Station #8
  - Bldg. 5068 Crash Crew Storage
  - Bldg. 5069 CCH
  - Bldg. 6822 Crash Crew Headquarters
  - MCBH Runways

2.3 SITE CATEGORIZATION

As part of this PA, 116 sites were evaluated. A summary of the evaluated sites and corresponding assigned groups are included in Table 2-1.

Table 2-1: Site Group Assessment

Installation	Building No./ Location	Description	Approach	AFFF?	Findings	Assigned Group
Camp H. M. Smith	612	Fire Station #16	Phone Interview	Y	110 gallons of AFFF located on 2 trucks; no off-truck storage, and no documented releases. The Federal Fire Department stated that AFFF is refilled at this fire station. A number of grassy areas surround the fire station where AFFF could infiltrate.	B
Manana Housing	68	Fire Station #5	Phone Interview	Y	AFFF located on two trucks; no off-truck storage, no known releases, and no unpaved surfaces.	D
MCBH Kaneohe Bay	15	Aircraft Revetment	Building Survey	N	No known use of AFFF or release.	—
	30	Flammables Storehouse	Building Survey	N	No known use of AFFF or release.	—
	101	Hangar 1	Building Survey, Visual Inspection	N	Water suppression system, no suppression system prior to installation.	—
	102	Hangar 2	Building Survey, Visual Inspection	N	Water suppression system, no suppression system prior to installation.	—
	103	Hangar 3	Building Survey, Visual Inspection	N	Water suppression system, no suppression system prior to installation.	—
	104	Hangar 4	Building Survey, Visual Inspection	N	Water suppression system, no suppression system prior to installation.	—

Installation	Building No./ Location	Description	Approach	AFFF?	Findings	Assigned Group
MCBH Kaneohe Bay (cont'd)	105	Hangar 5	Building Survey, Visual Inspection	N	Water suppression system, no suppression system prior to installation.	—
	125	Heating Fuel Storage/Navy Spec	Building Survey	N	No known use of AFFF or release.	—
	159	Hanger Shop Spaces	Building Survey	N	No known use of AFFF or release.	—
	160	Aircraft Spares Storage	Building Survey	N	No known use of AFFF or release.	—
	162	General/Flight Equip Storage	Building Survey	N	No known use of AFFF or release.	—
	163	Hazardous Material Storage	Building Survey	N	No known use of AFFF or release.	—
	168	Aircraft Spares Storage	Building Survey	N	No known use of AFFF or release.	—
	170	Aircraft Spares Storage	Building Survey	N	No known use of AFFF or release.	—
	190	Aircraft Spares Storage	Building Survey	N	No known use of AFFF or release.	—
	191	Flammables Storage	Building Survey	N	No known use of AFFF or release.	—
	194	Haz Mat Storage	Building Survey	N	No known use of AFFF or release.	—
	195	Flammables Storage	Building Survey	N	No known use of AFFF or release.	—
	196	Flammables Storage	Building Survey	N	No known use of AFFF or release.	—
	214	Flammables Storage	Building Survey	N	No known use of AFFF or release.	—
	220	JT ED/Red Cross Civil Air Patrol	Building Survey	N	No known use of AFFF or release.	—
	243	Training Set Fire Observation	Building Survey	N	No known use of AFFF or release.	—
	300	MCBH Wrecker Section	Building Survey	N	No known use of AFFF or release.	—
	347	Fuels Operation Facility	Building Survey	N	No known use of AFFF or release.	—
	348	Flammables Storage	Building Survey	N	No known use of AFFF or release.	—
	373	Building	Building Survey, Visual Inspection	N	New unit; no use of AFFF to date.	—
	375	Maintenance Hangar	Building Survey, Visual Inspection	N	Water suppression system, no suppression system prior to installation.	—
	475	Flammables Storage	Building Survey	N	No known use of AFFF or release.	—
	476	Flammables Storage	Building Survey	N	No known use of AFFF or release.	—
	615	Crash Crew Storage Misc.	Building Survey	N	No known use of AFFF or release.	—
	620	Aircraft Recovery Operations	Building Survey	N	No known use of AFFF or release.	—

Installation	Building No./ Location	Description	Approach	AFFF?	Findings	Assigned Group
MCBH Kaneohe Bay (cont'd)	995	Flammables Storage	Building Survey	N	No known use of AFFF or release.	—
	1168	Aircraft Fire and Rescue Station	Building Survey		Building demolished. Same location as Bldg. 6822 which will be investigated as a Group B site, including the area where former Bldg. 1168 stood.	—
	1170	Aircraft Direct Fuel Island	Building Survey	N	No known use of AFFF or release.	—
	1171	Aircraft Direct Fuel Island	Building Survey	N	No known use of AFFF or release.	—
	1216	Aircraft Arresting Gear	Building Survey	N	No known use of AFFF or release.	—
	1217	Aircraft Arresting Gear	Building Survey	N	No known use of AFFF or release.	—
	1252	AST Farm	Building Survey, Visual Inspection	N	Uses halon as fire suppression.	—
	1253	Aircraft Ready Fuel Storage	Building Survey	N	No known use of AFFF or release.	—
	1273	Aircraft Arresting Gear	Building Survey	N	No known use of AFFF or release.	—
	1563	Aircraft Truck Loading	Building Survey	N	No known use of AFFF or release.	—
	1563A	Aircraft Truck Loading	Building Survey	N	No known use of AFFF or release.	—
	1563B	Aircraft Truck Loading	Building Survey	N	No known use of AFFF or release.	—
	1577	Fire Control Post	Building Survey	N	No known use of AFFF or release.	—
	1617	Fire Training Pit	Document Review, Building Survey, Visual Inspection	Y	Used AFFF, per 1990 FFTA SI Report.	A
	1631	Aircraft Wash Rack	Building Survey	N	No known use of AFFF or release.	—
	1657	Helicopter Landing Pad	Building Survey	N	No known use of AFFF or release.	—
	1659	Helicopter Landing Pad	Building Survey	N	No known use of AFFF or release.	—
	3073	Helicopter Rinse Facility	Building Survey	N	No known use of AFFF or release.	—
	3081	Hazardous Waste Material Storage	Building Survey	N	No known use of AFFF or release.	—
	3082	Flammable Materials Storage	Building Survey	N	No known use of AFFF or release.	—
	3083	Flammable Materials Storage	Building Survey	N	No known use of AFFF or release.	—
	3084	Flight Line Building	Building Survey	N	No known use of AFFF or release.	—

Installation	Building No./ Location	Description	Approach	AFFF?	Findings	Assigned Group
MCBH Kaneohe Bay (cont'd)	4074	Fire Station #8	Building Survey, Interview, Visual Inspection	Y	Station has three trucks with 70 gallons of AFFF each, portable hose drying rack located in grassy area, and 5-gallon containers of AFFF stored at the fire station. Potential AFFF release during hose drying.	B
	5020	Aircraft Power Check Pad	Building Survey	N	No known use of AFFF or release.	—
	5055	Chemical storage/ waste collect	Building Survey, Visual Inspection	N	No AFFF. AFFF for the facility is located in Bldg. 6082.	—
	5061	Hazardous Materials Facility	Building Survey	N	No known use of AFFF or release.	—
	5068	Crash Crew Storage	Building Survey, Visual Inspection	Y	AFFF stored is from various years and manufacturers, as early as 1988.	B
	5069	CCH	Building Survey, Interview, Visual Inspection	Y	AFFF fire suppression system released foam in last year.	A
	5077	Aircraft Compass Calibration Pad	Building Survey	N	No known use of AFFF or release.	—
	5078	Hazardous Waste Transfer Shed	Building Survey	N	No known use of AFFF or release.	—
	5096	Hazardous Waste Transfer Shed	Building Survey	N	No known use of AFFF or release.	—
	5097	Hazardous Waste Transfer Shed	Building Survey	N	No known use of AFFF or release.	—
	6065	Flammable Storage Facility	Building Survey	N	No known use of AFFF or release.	—
	6066	Flammable Storage Facility	Building Survey	N	No known use of AFFF or release.	—
	6067	Flammable Storage Facility	Building Survey	N	No known use of AFFF or release.	—
	6068	Flammable Storage Facility	Building Survey	N	No known use of AFFF or release.	—
	6079	Flight Line Lox Facility	Building Survey	N	No known use of AFFF or release.	—
	6082	Storage/Outdoor pallet of AFFF	Building Survey, Visual Inspection	Y	Storage of AFFF with no known/documented AFFF releases.	D
	6107	Aircraft Rinse Facility	Building Survey	N	No known use of AFFF or release.	—
	6116	Aircraft Rinse Facility	Building Survey	N	No known use of AFFF or release.	—
	6137	Co-mingled Fuel Storage	Building Survey	N	No known use of AFFF or release.	—
	6138	Co-mingled Fuel Storage	Building Survey	N	No known use of AFFF or release.	—
	6139	Co-mingled Fuel Storage	Building Survey	N	No known use of AFFF or release.	—
	6140	Co-mingled Fuel Storage	Building Survey	N	No known use of AFFF or release.	—
	6141	Co-mingled Fuel Storage	Building Survey	N	No known use of AFFF or release.	—

Installation	Building No./ Location	Description	Approach	AFFF?	Findings	Assigned Group
MCBH Kaneohe Bay (cont'd)	6142	Co-mingled Fuel Storage	Building Survey	N	No known use of AFFF or release.	—
	6143	Co-mingled Fuel Storage	Building Survey	N	No known use of AFFF or release.	—
	6144	Co-mingled Fuel Storage	Building Survey	N	No known use of AFFF or release.	—
	6145	Co-mingled Fuel Storage	Building Survey	N	No known use of AFFF or release.	—
	6146	Co-mingled Fuel Storage	Building Survey	N	No known use of AFFF or release.	—
	6147	Co-mingled Fuel Storage	Building Survey	N	No known use of AFFF or release.	—
	6148	Co-mingled Fuel Storage	Building Survey	N	No known use of AFFF or release.	—
	6149	Co-mingled Fuel Storage	Building Survey	N	No known use of AFFF or release.	—
	6150	Co-mingled Fuel Storage	Building Survey	N	No known use of AFFF or release.	—
	6151	Co-mingled Fuel Storage	Building Survey	N	No known use of AFFF or release.	—
	6152	Co-mingled Fuel Storage	Building Survey	N	No known use of AFFF or release.	—
	6153	Co-mingled Fuel Storage	Building Survey	N	No known use of AFFF or release.	—
	6154	Co-mingled Fuel Storage	Building Survey	N	No known use of AFFF or release.	—
	6155	Co-mingled Fuel Storage	Building Survey	N	No known use of AFFF or release.	—
	6158	Co-mingled Fuel Storage	Building Survey	N	No known use of AFFF or release.	—
	6159	Co-mingled Fuel Storage	Building Survey	N	No known use of AFFF or release.	—
	6160	Co-mingled Fuel Storage	Building Survey	N	No known use of AFFF or release.	—
	6161	Co-mingled Fuel Storage	Building Survey	N	No known use of AFFF or release.	—
	6162	Co-mingled Fuel Storage	Building Survey	N	No known use of AFFF or release.	—
	6163	Co-mingled Fuel Storage	Building Survey	N	No known use of AFFF or release.	—
	6183	Aircraft Engine Test Facility	Building Survey	N	No known use of AFFF or release.	—
	6407	Hazmat storage facility	Building Survey, Visual Inspection	N	Does not contain AFFF.	—
	6408	Hazwaste Processing Building	Building Survey	N	No known use of AFFF or release.	—
	6469	Aviation Supply Facility	Building Survey	N	No known use of AFFF or release.	—
	6471	Fire Pump Building	Building Survey, Visual Inspection	N	Fire pump is for water.	—
	6472	Fire Pump Water Storage Tank	Building Survey	N	No known use of AFFF or release.	—

Installation	Building No./ Location	Description	Approach	AFFF?	Findings	Assigned Group
MCBH Kaneohe Bay (cont'd)	6473	Fire Pump Water Storage Tank	Building Survey	N	No known use of AFFF or release.	—
	6474	Hazmat/ Hazwaste facility	Building Survey, Visual Inspection	N	Contains household hazardous waste.	—
	6475	Helicopter Landing Pad	Building Survey	N	No known use of AFFF or release.	—
	6479	Jet Engine Fuel Storage	Building Survey	N	No known use of AFFF or release.	—
	6496A	Aircraft Truck Loading Facility	Building Survey	N	No known use of AFFF or release.	—
	6685	Hazardous Waste Facility	Building Survey	N	No known use of AFFF or release.	—
	6697	Corrosion repair facility	Building Survey, Visual Inspection	N	No AFFF located in the building or in the facility.	—
	6714C3	PMO 1st Responder Equipment Shed	Building Survey	N	No known use of AFFF or release.	—
	6765C3	AAV Air Dehydration Structure	Building Survey	N	No known use of AFFF or release.	—
	6822	Crash Crew Headquarters	Building Survey, Visual Inspection	Y	Has AFFF stored at the building.	B
	N/A	Runways	Building Survey, Visual Inspection	Y	AFFF used in crash response, no current records of crashes from 2010 to present.	B
	TFS	Aircraft Engine Test Facility	Building Survey	N	No known use of AFFF or release.	—
MCTAB	LZ Gull	MV-22 hard landing mishap site	Document Review	Y	AFFF was used during hard landing mishap fire response.	A [a]
Puuloa Range Training Facility	No identified buildings or Facilities		Building Survey	N	No known use of AFFF or release.	—

— excluded from future evaluation
AFFF aqueous film-forming foam
AST aboveground storage tank
CCH corrosion control hangar
FFTA fire fighting training area
MCBH Marine Corps Base Hawaii
N/A not applicable
no. number
PFAS per- and polyfluoroalkyl substances
[a] LZ Gull was identified and is being evaluated as part of a separate project.

Of the sites evaluated, three sites were identified as Group A and five as Group B sites (Figure 2-2 and Figure 2-3). There were no sites identified as Group C and two sites identified as Group D. Of the sites, 108 were not grouped as there is no AFFF usage, storage identified at the site, or known/documented releases currently or historically.

2.3.1 Group A Sites

The following sites were identified as Group A:

- MCBH Kaneohe Bay:
  - Bldg. 1617 Fire Training Pit
  - Bldg. 5069 CCH
- MCTAB
  - LZ Gull (potential PFAS impact at LZ Gull is being evaluated as part of a separate project)

2.3.2 Group B Sites

The following sites were identified as Group B:

- Camp H. M. Smith
  - Bldg. 612 Fire Station #16
- MCBH Kaneohe Bay
  - Bldg. 4074 Fire Station #8
  - Bldg. 5068 Crash Crew Storage
  - Bldg. 6822 Crash Crew Headquarters
  - MCBH Runways

2.3.3 Group D Sites

The following site was identified as Group D:

- Manana Housing
  - Bldg. 68 Fire Station #5
- MCBH Kaneohe Bay
  - Bldg. 6082 Storage

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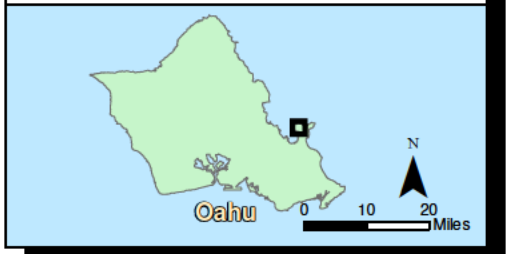
LOCATION MAP



LEGEND

- Buildings Visually Inspected
- MCBH Kaneohe Bay
- Runway

NOTES

1. Basemap: Google Earth V7.1.1.2606
   2016 Digital Globe 2018, USGS
2. Map projection is Hawaii State
   Plane 3, NAD 1983

N

0 1,550 3,100 Feet

Figure 2-1
Buildings Visually Inspected
Preliminary Assessment
Potential PFAS Sites
Marine Corps Base Hawaii
Oahu, Hawaii

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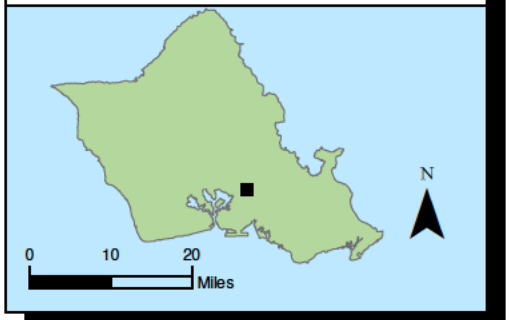
LOCATION MAP



LEGEND

- Group B
- Camp H. M. Smith

NOTES

1. Acronyms and Abbreviations:
   Bldg. - Building
2. Basemap: Google Earth V7.1.1.2606
   2016 Digital Globe 2018, USGS
3. Map projection is Hawaii State
   Plane 3, NAD 1983

N

0 300 600 Feet

Figure 2-2
Camp H. M. Smith
Group B Site Locations
Preliminary Assessment
Potential PFAS Sites
Marine Corps Base Hawaii,
Oahu, Hawaii

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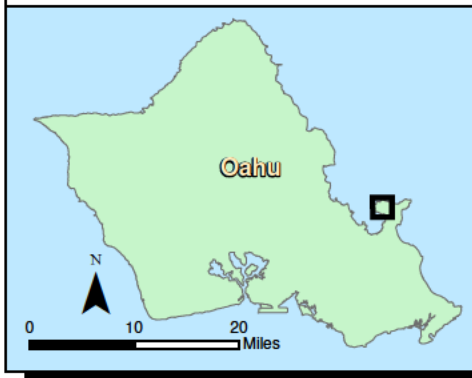
LOCATION MAP



LEGEND

- Group A
- Group B
- Runway / Group B
- MCBH Kaneohe Bay

NOTES

1. Map projection: NAD83 StatePlane FIPS 3
2. World Imagery - Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Acronyms and Abbreviations:
Bldg. - Building

N

0 1,000 2,000 Feet

Figure 2-3
MCBH Kaneohe Bay
Group A and B
Site Locations
Preliminary Assessment
Potential PFAS Sites
Marine Corps Base Hawaii,
Oahu, Hawaii

3. Physical and Environmental Characteristics

The following section provides site-specific information about the two Group A sites and the five Group B sites identified during the PA, including site history, site description, climate, topography, geology, hydrogeology, vegetation and wildlife, cultural resources, land use, access controls and restrictions, potential receptors, and migration routes.

3.1 SITE LOCATION AND SETTING

MCBH Kaneohe Bay occupies the entire 2,951 acres of Mokapu Peninsula in Kaneohe Bay on the windward (northeast) coast of Oahu. Bldg. 1617 Fire Fighting Training Area (FFTA), Bldg. 5069 CCH, Bldg. 5068 Crash Crew Storage, Bldg. 6822 Crash Crew Headquarters, and MCBH Runways are located on the western side of the peninsula. Bldg. 1617 FFTA is located along the shoreline. Bldg. 5069 is located on the corner of B Street and Third Street. Bldg. 4074 Fire Station No. 8 is located at the center of the peninsula (Figure 2-3).

Camp H. M. Smith is located in the foothills of the Koolau Mountain range on a ridge known as Halawa Heights (Figure 2-2). The Camp H. M. Smith property was originally agricultural land used for sugar cane production and cattle grazing. In 1941, the property was purchased by the United States Department of the Navy (Navy) for construction of the Aiea Naval Hospital, which was used to treat Navy and Marine Corps personnel until its deactivation in 1949. Since 1957, Camp H. M. Smith has been used as headquarters for both the Fleet Marine Force, Pacific, and the Commander in Chief, Pacific (DON 2002).

3.2 SITE HISTORY

The following sections detail the historic use of AFFF at each of the Group A and B sites identified in Section 2.3.

3.2.1 Camp H. M. Smith Bldg. 612 Fire Station #16

Camp H. M. Smith Bldg. 612 Fire Station #16 housed 110 gallons of AFFF located on two trucks and 30 gallons of reserve AFFF. The AFFF reserve is no longer stored at the Fire Station #16. The reserve is now located in Pearl Harbor. No off-truck storage exists and no known releases have occurred.

3.2.2 MCBH Building 1617 Fire Fighting Training Area

MCBH Bldg. 1617 FFTA has been in use since 1953. From 1953 to 1979, firefighting training exercises were conducted at two unlined circular burn pits and one unlined rectangular burn pit. The unlined circular pits were approximately 75 feet in diameter. The unlined rectangular pit was approximately 70 feet in length by approximately 4 feet wide. In 1978 and 1979, the unlined pits were replaced with a concrete-lined circular pit and a concrete-lined rectangular pit to prevent petroleum, oil, and lubricants from seeping into the ground and the adjacent waters. The concrete-lined circular pit is approximately 100 feet in diameter. The concrete-lined rectangular pit is approximately 50 feet in length and 4 feet in width.

To conduct the firefighting training exercises, open-pit fires were set to simulate an aircraft fire. Prior to 1975, waste oils, solvents, and infrequently, napalm, were burned during the training exercises as a method of disposal for these materials. According to the Initial Assessment Study, water and firefighting chemicals (AFFF, Purple-K, and protein foam) were then used to extinguish the fire. Training exercises were conducted once or twice a week, and would use approximately 150 gallons per month of Light Water (manufactured by 3M) AFFF (NEESA 1984). AFFF is not currently being

used for firefighting training exercises. Based on previous investigations and reports, it is unclear when firefighting training exercises stopped using AFFF.

3.2.3 MCBH Building 5069 Corrosion Control Hangar

MCBH Bldg. 5069 was built in 1990 for use as a CCH. An AFFF fire suppression system was installed in the building for fire protection. In 2015, a malfunction of the fire suppression system released an undetermined quantity of AFFF. The floor drain within the building discharged the AFFF into the dry detention basin located west of Bldg. 5069.

3.2.4 MCBH Bldg. 4074 Fire Station No. 8

MCBH Bldg. 4074 Fire Station No. 8 was constructed in 1987 for use as a fire station and remains an active fire station today. It currently houses three fire trucks which each hold 70 gallons of AFFF.

3.2.5 MCBH Bldg. 5068 Crash Crew Storage

MCBH Bldg. 5068 Crash Crew Storage, an AFFF shed, was constructed in 1991 for aircraft rescue operations. AFFF, from various manufacturers and years, have been stored in this location for emergency backup for the crash crew vehicles since construction in 1991 (DON 2005b). The building is located east of the runway.

3.2.6 MCBH Bldg. 6822 Crash Crew Headquarters

The former MCBH Bldg. 6822 was constructed prior to 1959 and demolished in 2014 for use as the Crash Crew Headquarters. A new MCBH Bldg. 6822 Crash Crew Headquarters was constructed in 2014. Both the former and the current Bldg. 6822 Crash Crew Headquarters store the ARFF trucks. The ARFF trucks each contain approximately 400 gallons of AFFF for crash related responses. The building is located east of MCBH Runways. This investigation will cover the footprint of the former Bldg. 6822 and the current Bldg. 6822 Crash Crew Headquarters.

3.2.7 MCBH Runways

MCBH Runways are located on the western side of MCBH, next to the shoreline. The runways are oriented southwest-northeast. The aircraft runways at MCBH were constructed prior to World War II. There were no records of AFFF being released due to crashes.

3.3 SITE DESCRIPTION

The following subsections include the site description, climate, topography, geology, hydrogeology, vegetation and wildlife, and cultural resources at Camp H. M. Smith and MCBH Kaneohe Bay. Based on the close proximity of the sites on MCBH Kaneohe Bay and similar physical settings, Group A and B sites are combined in the following sections.

3.3.1 Physical Setting

The specific physical settings, including topography, climate, and surface water of Camp H. M. Smith and MCBH Kaneohe Bay, are discussed in detail below.

3.3.1.1 TOPOGRAPHY

Camp H. M. Smith is located in the foothills of the Koolau Mountain Range. The site slopes from the north at an elevation of 186.54 meters (612 feet) MSL down to the south at an elevation of 185.01 meters (607 feet) (DON 2005a).

MCBH Kaneohe Bay occupies the entire Mokapu Peninsula. Approximately two-thirds of the peninsula is relatively flat with ground-surface elevations of less than 20 feet above mean sea level. MCBH Runways are situated on a flat, coastal plain, which was created by filling a shallow lagoon area. The ground surface elevation at Bldg. 4074 Fire Station No. 8, Bldg. Bldg. 5068 Crash Crew Storage, Bldg. 6822 Crash Crew Headquarters, and MCBH Runways are approximately 3 feet above mean sea level (DON 2012).

3.3.1.2 CLIMATE

Because of the location of the Hawaiian Islands in the northern tropics and the presence of cooling trade winds, Oahu's climate is mild. Northeasterly trade winds prevail over the island year-round. The trade winds are more persistent in the summer than in the winter. Trade winds in the winter are interrupted in most cases by the southerly Kona winds, and variably by winds from the east and west. Temperatures are coolest in January through March with mean daily temperatures of 69 degrees Fahrenheit, and warmest in August through September with mean daily temperatures of 75 degrees Fahrenheit. Relative humidity on Oahu ranges from 30 to 90 percent. The main mechanism for rainfall is warm, moist ocean air rising and cooling as it passes over the mountains, causing precipitation. The average annual precipitation at Camp H. M. Smith is 20 inches (DON 2004). The average annual precipitation at MCBH Kaneohe Bay is approximately 38.9 inches (USAF 1990).

3.3.1.3 SURFACE WATER

Camp H. M. Smith: The nearest surface water body to Camp H. M. Smith is South Halawa Stream, approximately 600 feet below and 1,000 feet east of the site (DON 2004).

MCBH: Four water bodies nearly surround MCBH Kaneohe Bay: Kaneohe Bay to the west and southwest; the Pacific Ocean to the north; Kailua Bay to the southeast; and the Nuupia Ponds to the south. Bldg. 4074 Fire Station No. 8 is approximately 1,700 feet from Kaneohe Bay. Bldg. 5068 Crash Crew Storage is approximately 3,500 feet from the Pacific Ocean. Bldg. 6822 Crash Crew Headquarters is approximately 3,500 feet from Kaneohe Bay. MCBH Runways are adjacent to the Pacific Ocean shoreline near the northern edge of MCBH.

Kaneohe Bay occupies about 11,360 acres at sea level, and is approximately 8 miles long and 2.6 miles wide. The bay is the largest estuary in the state, and most species of coral in the Hawaiian Islands are found in the bay's reefs. The bay is also an important source of bait fish (*nehu*) for the commercial tuna fishing industry (DON 2012).

3.3.2 Geology and Soils

3.3.2.1 CAMP H. M. SMITH

The soils in the site vicinity are variable due to natural weathering processes characteristic of the climate and elevation. Most of the area is mapped as the Manana series of soils. Manana soils are considered acidic, compact, generally silty at the surface, and erode severely under heavy rainfall (DON 1988). Rock underlying the soils consists of thick bedded basalts, characterized as Pliocene-era Koolau Basalts, interspersed with thick beds of soil. The basaltic formations dip to the southwest away from the former center of the eruptive center of the Koolau volcano (Macdonald, Abbott, and Peterson 1983; Stearns 1985).

The surface soil at the site of Bldg. 612 consists of moist, reddish brown clay derived from the decomposition of basalt (DON 2005a).

3.3.2.2 MCBH KANEOHE BAY

The primary geological processes that formed the Kaneohe area are the building of the Koolau shield volcano, post-volcanic erosion, post-erosional eruptions of the Honolulu Volcanic Series, the building of fringing reefs, changes in sea level, and the deposition of alluvial and marine sediments. The main rift zones of the Koolau volcano run in a northwest direction through the Kaneohe area. These rift zones consist of dikes: dense, impermeable remnant conduits through which lava extruded from the Koolau volcanic shield. The dikes cut vertically through the more permeable lava flows and are numerous in the lowland areas of Kaneohe. The number of dikes in this central part of the rift zone averages more than 100 per mile, and the region is referred to as the dike complex. In the mountain areas, the density of dikes is fewer than 100 per mile and this region is referred to as the marginal dike complex. The surface of the Koolau basalts is estimated to be 300 to 1,000 feet below ground surface (bgs) at the Mokapu Peninsula (Stearns 1939).

A long period of quiescence followed the Koolau eruptions. During that time, the volcanic shield was eroded nearly to the present topography. This period lasted at least 2 million years and was followed by post-erosional eruptions that produced the lava flows, cinder cones, and tuff cones of the Honolulu Volcanic Series. Four volcanic cones from the Honolulu Volcanic Series are located in the Mokapu Peninsula: Puu Hawaiiloa, Pali Kilo, Ulupau, and Pyramid Rock. Puu Hawaiiloa and Pali Kilo are cinder cones. Ulupau is a tuff cone, and Pyramid Rock is a nephelinite basalt cone.

Weathering, erosion, and alluvial deposition of the volcanic material shaped the topography between and after the Honolulu Volcanic Series events. On the Mokapu Peninsula, younger deposits of alluvium are found in inland areas of Ulupau Crater and Puu Hawaiiloa at an elevation of approximately 200 feet. Younger alluvium is comprised mainly of gravel, sand, and silt.

Reef-building and marine sediment deposition formed flat areas near sea level in areas fringing the volcanic cones in the central part of the Mokapu Peninsula. These low-lying areas connect the volcanic cones of the peninsula with the main part of the island of Oahu. The area containing MCBH Runways was previously a shallow lagoon or reef. The present land surface was created by filling the shallow area with dredged material from Kaneohe Bay in the 1940s (DON 2012; USACE 2009).

Surface soil at Bldg. 1617 Fire Training Pit, Bldg. 4074 Fire Station #8, Bldg. 5068 Crash Crew Storage, Bldg. 5069 CCH, Bldg. 6822 Crash Crew Headquarters, and MCBH Runways are predominantly comprised of moist, dense silty sand in most areas, which represents fill soils imported during construction, leveling, and filling.

3.3.3 Groundwater Hydrogeology

3.3.3.1 CAMP H. M. SMITH

The groundwater beneath the site is at the intersection of the Waiawa (30202111) and Waimalu (30201111) systems within the Pearl Harbor aquifer sector, where groundwater is unconfined in basal flank lavas. The status code 1111 applies to both systems and indicates groundwater from beneath the site is currently used to supply drinking water having less than 250 milligrams per liter (mg/L) of chloride, and that it is an irreplaceable source highly vulnerable to pollution. The groundwater beneath the site is considered a Class I groundwater (Mink and Lau 1990).

3.3.3.2 MCBH KANEOHE BAY

Two aquifer systems are present on the Mokapu Peninsula and beneath the areas of concern (AOCs): a deep basal aquifer and a shallow unconfined aquifer. The deep basal aquifer is classified as an irreplaceable freshwater drinking water source with low vulnerability to contamination. The shallow

unconfined aquifer is classified as ecologically important with a low salinity (250–1,000 milligrams per liter). It is considered irreplaceable and has a high vulnerability to contamination (Mink and Lau 1990).

Water infiltrating the ground surface in the Mokapu Peninsula percolates into the shallow, unconfined groundwater body. The shallow groundwater body may receive recharge as leakage from the basal aquifer. However, it is unlikely that potential COPCs from the AOCs could migrate from the shallow groundwater body to the basal aquifer because of the distance between the two and the presence of an upward pressure gradient from the basal aquifer toward the shallow groundwater body. Because the shallow groundwater body is surrounded by surface water bodies on all sides, groundwater elevations occur near sea level and are influenced by the tidal cycle (DON 2012). Due to the salinity; low permeability and production; and historical contamination, groundwater on the seaward side of the underground injection control line is not generally considered to be a potential drinking water source (DOH 2011). All sites are located seaward of the underground injection control line.

3.3.4 Vegetation and Wildlife

Vegetation at the Camp H. M. Smith Bldg. 612 Fire Station #16 consists of grass surrounding the building.

MCBH Runways are sparsely vegetated. Hawaiian stilts are known to nest near the coastal plants north of the AOC area (USMC 2016). Protected waterbirds such as the koloa (*Anas wyvilliana*)/mallard (*Anas platyrhynchos*) hybrid, Pacific golden plover (*Pluvialis fulva*), wandering tattler (*Tringa incana*), and sanderling (*Calidris alba*) have also been observed in the area. The area is considered prime hunting grounds for a variety of owls due to the proximity of the AOC to the forested area in the north (USMC 2016).

Vegetation at the remaining MCBH Kaneohe Bay Group A and B sites consists primarily of grass surrounding the buildings. Owls use the area sporadically for hunting. The Pacific golden plover is also known to frequent the area due to the paved surfaces and rooftops surrounding the site (USMC 2016).

3.3.5 Cultural Resources

Prior archaeological studies identified 52 archaeological sites within MCBH that date from the Pre-Contact and Early Historic periods. These include traditional Hawaiian fishponds, agricultural sites, habitation sites, and possible human burial sites. Areas of archeological importance within the sites are located in the north and south ends of the MCBH Runways. The north end of the main MCBH Runway is the Mokapu Burial Area. A Section 106 consultation will be submitted prior to initiation of the MCBH Runways investigation. Cultural resources monitoring will be conducted during intrusive activities conducted at this site.

3.4 POTENTIAL RECEPTORS

Potential receptors on the Group A and B sites include Navy personnel, contractors, authorized visitors, and trespassers. Details of the receptor groups and exposure pathways are provided in the following sections.

3.4.1 Nearby Populations

The community of Halawa lies against the southern boundary of Camp H. M. Smith. Halawa has a population of 14,014 and Camp H. M. Smith has a population of 198 (U.S. Census 2010).

The town of Kaneohe and Kailua lie against the southern boundary of MCBH Kaneohe Bay. Kaneohe has a population of 34,597 and Kailua has a population of 38,635 (U.S. Census 2010). The current population at MCBH Kaneohe Bay includes more than 25,000 Marines, sailors, family member, and civilian employees.

3.4.2 Buildings Near/Within Site

Camp H. M Smith Bldg. 612 Fire Station #16: Building 3B, an annex of the United States Marine Corps Forces, Pacific Headquarters Complex, is located west of Fire Station #16.

MCBH Bldg. 1617 FFTA: No buildings are located within the vicinity of Bldg. 1617 FFTA.

MCBH Bldg. 5069 CCH: Two buildings are located adjacent to Bldg. 5069; Bldg. 375 Aircraft Maintenance is located to the east and Bldg. 6471 Fire Pump Bldg. is located to the south of Bldg. 5069.

MCBH Bldg. 4074 Fire Station #8: Bldg. 1583 Mini-gym is located to the north, and Bldg. 3071 K-Bay Marine Mart is located to the south of Bldg. 4074.

MCBH Bldg. 5068 Crash Crew Storage: Bldg. 4075 Warehouse is located to the north of Bldg. 5068.

MCBH Bldg. 6822 Crash Crew Headquarters: Bldg. 373 Motor Vehicle Maintenance Shop is located to the south of Bldg. 6822.

MCBH Runways: The following buildings are located around the perimeter of the MCBH Runways:

- Bldg. 105 Hangar
- Bldg. 3073 Helicopter Rinse Facility
- Bldg. 3099 Game Warden Shack
- Bldg. 6183 Engine Test Facility
- Bldg. 6822 Crash Crew Headquarters

3.4.3 Utilities On/Near Site

Camp H. M Smith Bldg. 612 Fire Station #16: Electrical, water, and sewer lines are located within the site, although the exact locations of the lines are currently unknown.

MCBH Bldg. 1617 FFTA: Aboveground pipes containing fuel and water for fire training activities is located on the north end of the existing fire training pit. There are no known electrical or sewer lines located at the site.

MCBH Bldg. 5069 CCH: Electrical, water, and sewer lines are located within the site, although the exact location of the lines are currently unknown. There are two large ASTs for water located on the east side on the building. There is also a 1,000 gallon AST located near the southwestern corner of the building. An AFFF above ground tank is located in the building. However, the exact location is unknown as the personnel with access to the building at the time were unsure where the tank was. Hangar floor drains are located around the interior and perimeter of the building and drain to the dry well located north of the building.

MCBH Bldg. 4074 Fire Station #8: Electrical, water, and sewer lines are located within the site, although the exact location of the lines are currently unknown.

MCBH Bldg. 5068 Crash Crew Storage: Electrical lines are located within the site, although the exact location of the lines is currently unknown. There are no known water or sewer lines located within the site.

MCBH Bldg. 6822 Crash Crew Headquarters: Electrical, water, and sewer lines are located within the site, although the exact location of the lines are currently unknown.

MCBH Runways: Electrical, water, and sewer lines are located within the site, although the exact location of the lines are currently unknown.

3.4.4 Land Use

Camp H. M Smith Bldg. 612 Fire Station #16: Bldg. 612 is the federal fire station located on the installation. It is unlikely that the land use will change in the foreseeable future.

MCBH Bldg. 1617 FFTA: Bldg. 1617 is the installation's fire training pit used for fire training exercises by the crash crew. The fire training pits have changed since 1953, however, the land use has remained the same and is unlikely to change in the foreseeable future.

MCBH Bldg. 5069 CCH: Bldg. 5069 is the installation's only CCH. It is unlikely that the land use for Bldg. 5069 CCH will change in the foreseeable future.

MCBH Bldg. 4074 Fire Station #8: Bldg. 4074 is the federal fire station located on the installation. It is unlikely that the land use will change in the foreseeable future.

MCBH Bldg. 5068 Crash Crew Storage: Bldg. 5068 is a storage shed used by the crash crew to house AFFF reserves, and other firefighting chemicals. Based on the need for the crash crew to store firefighting chemical reserves, and its proximity to the runway, it is unlikely for land use to change in the foreseeable future. In recent years, the areas surrounding the building were used to store construction materials.

MCBH Bldg. 6822 Crash Crew Headquarters: The building location for the crash crew has moved to a location further south adjacent to the runway. However, based on the location adjacent to the runway, the land use is unlikely to change in the foreseeable future.

MCBH Runways: The runways at the installation have been in operation since the 1940s. It is unlikely that the land use will change in the foreseeable future.

3.4.5 Access Controls/Restrictions

Camp H. M. Smith is a fenced and guarded installation. Bldg. 612 Fire Station #16 is located within the gated installation.

MCBH Kaneohe Bay is a fenced and guarded installation. All sites are located within the gated installation. Some members of the public have access to the coastal areas of MCBH Kaneohe Bay for recreational use, including fishing. Currently, no restrictions on land use are identified for any of the installation's six Group A and B sites.

3.4.6 Conceptual Site Model

The human health and ecological conceptual site model (CSM) for Bldg. 1617 FFTA, Bldg. 5069 CCH describe the COPC sources, chemical migration pathways, and receptor exposure pathways potentially present (Figure 3-1 through Figure 3-7). No CSM is provided for MCTAB LZ Gull as the site is being evaluated for potential PFAS impact under a separate project.

Each exposure pathway is characterized by the following:

- Source and release mechanism
- Transport mechanism
- Exposure route

The CSMs reflect current site conditions but also are based on historical information. The human health pathway evaluations are presented in Figure 3-8 and Figure 3-11, and the ecological exposure pathway evaluations are presented in Figure 3-12 and Figure 3-15. The data collected during the SI will be used to revise the CSMs if necessary, and to confirm or refute the preliminary conclusions presented in this CSM section. Neither the State of Hawaii Department of Health nor the United States Environmental Protection Agency have recognized any ecological criteria for PFAS and screening or toxicity values from other sources have not been accepted for use in ecological risk assessment. There are efforts underway, however, to establish screening criteria and toxicity values for ecological receptors based on research results in the literature. If appropriate and relevant benchmarks and toxicity values are available when the SI Report is prepared, ecological risk will be evaluated using this information. Pending a full evaluation of available information, the currently available screening values are not as stringent as screening values for human health. Therefore, laboratory limits of detection established to meet human health risk assessment needs are expected to be sufficiently low for ecological risk assessment needs.

The SI will focus on potential impacts to the surface and subsurface soil, and groundwater from past releases of AFFF and associated constituents. The preliminary CSMs were developed after evaluating the physical, demographic, and chemical information. For the purpose of the CSMs, the current and future land use practices are assumed to be the same as discussed in Section 10.2.1 of the work plan.

3.4.6.1 HUMAN HEALTH

The human health CSM for the Camp Smith Bldg. 612, Fire Station #16 (Figure 3-1) evaluates three potential receptor groups:

- Future onsite residents
- Current and future onsite occupational workers
- Current and future onsite construction workers

The human health CSM for the Bldg. 1617 FFTA site (Figure 3-2 and Figure 3-9) evaluates four potential receptor groups:

- Future onsite residents
- Current and future onsite occupational workers
- Future onsite construction workers
- Current and future recreational visitors

The human health CSM for the Bldg. 4074 Fire Station No. 8, Bldg. 5068 Crash Crew Storage, Bldg. 5069 CCH, and Bldg. 6822 Crash Crew Headquarters (Figure 3-3 through Figure 3-6 and Figure 3-10) evaluates four potential receptor groups:

- Future onsite residents
- Current and future onsite occupational workers
- Current and future onsite construction workers
- Current and future onsite casual trespassers

The human health CSMs for MCBH Runways (Figure 3-7 and Figure 3-15) evaluate four potential receptor groups:

- Future onsite residents
- Current and future onsite occupational workers
- Current and future onsite construction workers
- Current and future recreational visitors

The suspected source at all sites is a potential surface release of PFAS from AFFF during an accidental spill and, for runways, direct application in the event or anticipation of an airplane crash. If AFFF was released at the site, it may have percolated into the subsurface soils and groundwater. If COPCs are found in the surface and subsurface, they may have been transported within the AOC and offsite with groundwater.

Transport pathways leading to potential exposure to onsite and offsite receptors also tend to result in reduced COPC concentrations at receptor points distant from the immediate vicinity of the site itself. Thus, attenuation of COPC concentrations along the transport pathway in the offsite areas is expected to result in lower exposure levels for current and future receptors.

Surface Soil: Dermal and oral exposure to COPCs is possible through direct physical contact or incidental ingestion of impacted surface soil. Direct contact with or incidental ingestion of such materials may lead to absorption of chemicals through the skin or the gastrointestinal tract, where they enter the blood stream and are eventually absorbed by target organs. All current and future receptors are considered to have potentially complete routes of exposure for dermal absorption and incidental contact with the surface soil.

Air transport of COPC dust/particulates from surface soil is also potentially complete for all current and future receptors. The potential for exposure increases with activities that disturb the soil, such as excavation by on-site workers and gardening by potential future residents.

Subsurface Soil: Future residents and on-site construction workers are considered receptors with potentially complete pathways for dermal absorption and incidental ingestion from direct contact with subsurface soil. The potential for exposure increases with activities that disturb the soil, such as excavation by on-site construction workers and gardening by residents. Recreational visitors at Bldg. 1617 FFTA, onsite occupational workers, and casual trespassers are not expected to come in contact with the subsurface soil; therefore, the routes of exposure for direct contact with and incidental ingestion of COPCs in subsurface soil are considered incomplete pathways for these receptors.

Air transport of COPC dust/particulates from subsurface soil is also potentially complete for potential future residents and current and future onsite construction workers. As recreational users and onsite occupational workers should not be exposed to the subsurface soil, inhalation of impacted dust/particulates from subsurface soil is considered an incomplete exposure pathway for these receptors.

Groundwater: Although COPCs may migrate through subsurface soil to the groundwater, groundwater at the site is not used as a potable water source as discussed in Section 3.3.2.2. This significantly reduces the potential for human exposure to COPCs in groundwater.

Potential groundwater exposure pathways are summarized below:

- At Fire Station #16, groundwater is used to supply drinking water and is classified as a Class I aquifer. Because of the depth to groundwater (>500 feet bgs), the potential for PFAS migration to the aquifer is limited.
- The exposure pathway for residential receptors is not considered complete at the Bldg. 1617 FFTA and the Bldg. 5069 CCH because the shallow groundwater aquifer beneath the site is not a drinking water source. Additionally, the underlying basal aquifer has a low vulnerability to chemical impacts due to both the vertical separation between the two and the presence of an upward pressure gradient from the basal aquifer toward the shallow unconfined aquifer.
- The exposure pathway for onsite construction workers is potentially complete because workers may come into dermal contact with groundwater during potential construction or excavation activities.

Surface Water: Chemical transport with groundwater may result in COPCs entering Kaneohe Bay, the closest surface water body by the Bldg. 1617 FFTA and MCBH Runways sites. Potential surface water exposure pathways are summarized below:

- At Fire Station #16, surface migration of PFAS in soil at the site to surface water bodies is unlikely; historical releases were in the subsurface and even if soil excavation associated with the removal of the UST brought chemicals to the surface, PFAS in surface soil would be expected to infiltrate into the subsurface and not reach any surface water bodies via surface runoff. Further, because of the depth to groundwater (>500 ft) and the distance to locations where groundwater might discharge to surface water (over 1000 feet northwest to Aiea Stream, over 2000 feet southeast to North Halawa Stream), the potential for significant migration by this pathway is considered insignificant. However, the potential for downgradient, off-site exposures at locations where groundwater discharges to surface water will be reconsidered if the SI data suggest a potential for significant chemical migration via groundwater to these locations.
- Recreational visitors and potential future residents may have contact with surface water while wading and swimming. Therefore, the pathway is considered potentially complete.
- Onsite construction workers and occupational workers are not expected to spend time along the shoreline or in the ocean. Therefore, the pathway is considered incomplete.
- The exposure pathway for the recreational receptor and potential future resident at the Bldg. 1617 FFTA and MCBH Runways is potentially complete because Kaneohe Bay is used for swimming, fishing, boating, and other ocean activities, and the recreational receptor/resident may come into dermal contact with or ingest the surface water.

Biological Uptake: There are no agricultural activities in the area around MCBH Runways or the building sites, or Fire Station #16, and although hypothetical future residents could have gardens, any exposure via garden produce is considered insignificant compared to other routes of exposure. Other on-site receptors are not anticipated to harvest any plants or animals at or near the site. In the shoreline areas around Bldg. 1617 FFTA and MCBH Runways, recreational users (including residents) may fish or collect shellfish but are expected to find different fishing locations at other areas on the installation. As a result, the biological uptake along the shoreline is considered a potentially complete, but insignificant pathway. Occupational and construction workers are not expected to fish or collect shellfish along the shoreline during the work day.

3.4.6.2 ECOLOGICAL

Undeveloped terrestrial portions of the sites provide habitat to ecological receptors such as plants, soil invertebrates, and small birds and mammals. These receptors may be directly exposed to COPCs released to the surface soil (e.g., terrestrial plants, earthworms) via ingestion of impacted soil or food items (e.g., bird or mammals consuming impacted earthworms). Off-site aquatic systems that might be affected by groundwater discharge provide habitat for aquatic receptors, such as fish and aquatic invertebrates, and birds that eat these organisms.

Camp H. M. Smith Bldg. 612 Fire Station #16

The ecological CSM for the Camp Smith Bldg. 612, Fire Station #16 (Figure 3-12) evaluates four potential terrestrial receptor groups:

- Terrestrial plants
- Soil invertebrates
- Omnivorous mammals
- Omnivorous birds

Undeveloped terrestrial portions of the site provide habitat for ecological receptors such as plants, soil invertebrates, and small birds and mammals. These receptors may be directly exposed to COPCs released to the surface soil (e.g., terrestrial plants, earthworms) via ingestion of impacted soil or food items (e.g., bird or mammals consuming impacted earthworms).

Because the site is too small to provide a significant foraging area for predatory birds or shorebirds, any potential exposure to these receptors would be insignificant.

There are no aquatic habitats on or near the site where ecological exposure would be expected. Surface migration of PFAS in soil at the site to off-site surface water bodies is unlikely; historical releases were in the subsurface and even if soil excavation associated with the removal of the UST brought chemicals to the surface, PFAS in surface soil would be expected to infiltrate into the subsurface and not reach any surface water bodies via surface runoff.

Because of the depth to groundwater (>500 feet) and the distance to locations where groundwater might discharge to surface water (over 1000 feet northwest to Aiea Stream, over 2000 feet southeast to North Halawa Stream), the potential for significant migration by this pathway is considered insignificant.

If the results of the SI suggest a greater potential for migration via groundwater than currently expected, the potential impacts on ecological receptors in distant off-site aquatic habitats will be reevaluated.

Bldg. 1617 FFTA

The ecological CSM for Bldg. 1617 FFTA (Figure 3-2 and Figure 3-12) evaluates six potential terrestrial receptor groups:

- Terrestrial plants
- Soil invertebrates
- Omnivorous mammals
- Omnivorous birds
- Shorebirds
- Predatory birds

Shorebirds are considered separately from omnivorous birds because of the possible presence of the endangered Hawaiian stilt.

The ecological CSM for the Bldg. 1617 FFTA also evaluates six potential aquatic receptor groups:

- Aquatic life (e.g., invertebrates such as jellyfish and zooplankton, algae, and aquatic plants)
- Sediment biota
- Fish (all trophic levels)
- Shorebirds
- Wading birds
- Predatory birds

Surface Soil: Plants are exposed to surface soil through direct contact by roots. Therefore, the exposure pathway is considered potentially complete for plants through direct contact. Direct contact with soil by wildlife is considered insignificant, and direct contact with AFFF solution is considered incomplete because fire training activities no longer utilize AFFF at the site. Although dermal absorption of surface soil chemicals is potentially complete for all ecological receptors, the pathway is not evaluated quantitatively for two reasons:

- Scientific data to estimate exposure of wildlife to COPCs through dermal absorption are lacking.
- Because of the outer layer of fur or feathers, exposure of wildlife to COPCs through dermal absorption is expected to be insignificant compared to exposure by ingestion pathways.

Soil invertebrates may be exposed to COPCs by absorption through the integument, ingestion of soil, and ingestion of plants and soil biota. Wildlife is potentially exposed to chemicals in surface soil through incidental ingestion of soil and ingestion of biota that have accumulated chemicals from surface soil. Therefore, the exposure pathway for soil invertebrates and wildlife is considered potentially complete through incidental ingestion and food web transfers.

Subsurface Soil: Exposure pathways for all receptors are considered incomplete for subsurface soil. Plants may send roots into subsurface soil (deeper than 6 inches) and some invertebrates burrow into deeper soil. However, activity in deeper soil is considered negligible and most nutrient uptake by plants and most foraging by invertebrates are assumed to occur within the upper bioactive layer of soil (from

the surface to 6 inches below grade). Although burrowing animals may access deeper soils, exposure to subsurface soil is considered negligible compared to exposure to surface soil. There are no known burrowing birds (no identified seabird nesting colonies) or mammals on site.

Groundwater: COPCs in the groundwater table will occur at depths of approximately 5 feet or more bgs. Due to the depth to groundwater, the exposure pathways are considered incomplete for terrestrial plants and animals. Marine plants and animals are not expected to come into contact with groundwater, so exposure pathways are considered incomplete for aquatic plants and animals.

Surface Water: Chemical transport with groundwater could potentially result in COPCs entering Kaneohe Bay. The exposure pathways for direct contact and ingestion or uptake of COPCs in surface water are potentially complete for aquatic plants and animals because the Bldg. 1617 FFTA Site is approximately 300 feet from Kaneohe Bay. COPCs could migrate to the shoreline in surface runoff, attached to soil particles or dissolve in water, although this pathway is limited by the flat topography at the site, the distance to the shoreline, and the high permeability of the soil between the site and the shoreline.

Sediment: Chemical transport with groundwater could potentially result in COPCs entering Kaneohe Bay and potentially settling in the sediment. The exposure pathways for direct contact and ingestion or uptake of COPCs in sediment are a potentially complete pathway for aquatic plants and animals.

Bldg. 4074 Fire Station #8, Bldg. 5068 Crash Crew Storage, Bldg. 5069 CCH, and Bldg. 6822 Crash Crew Headquarters

The ecological CSMs for these locations (Figure 3-3 through Figure 3-6, Figure 3-14) evaluates six potential terrestrial receptor groups:

- Terrestrial plants
- Soil invertebrates
- Omnivorous mammals
- Omnivorous birds
- Shorebirds
- Predatory birds

The ecological CSMs for these AOCs also evaluates five potential aquatic receptor groups:

- Aquatic life (including plankton)
- Sediment biota
- Fish (all trophic levels)
- Shorebirds/waterbirds
- Predatory birds

Shorebirds are considered separately from omnivorous birds because of the possible presence of the endangered Hawaiian stilt.

Surface Soil: Plants are exposed to surface soil through direct contact by roots and soil invertebrates may be exposed by direct contact with outer body surfaces. Therefore, the exposure pathway is

considered potentially complete for plants and invertebrates through direct contact. Direct contact with soil by wildlife is considered insignificant. Although dermal absorption of surface soil chemicals is potentially complete for all wildlife receptors, the pathway is not evaluated quantitatively for two reasons:

- Scientific data to estimate exposure of wildlife to COPCs through dermal absorption are lacking.
- Because of the outer layer of fur or feathers, exposure of wildlife to COPCs through dermal absorption is expected to be insignificant compared to exposure by ingestion pathways.

Soil invertebrates may be exposed to COPCs by the ingestion of soil, plants, and other soil biota. Wildlife is potentially exposed to chemicals in surface soil through incidental ingestion of soil and ingestion of biota that have accumulated chemicals from surface soil. Therefore, the exposure pathway for soil invertebrates and wildlife is considered potentially complete through incidental ingestion and food web transfers.

Subsurface Soil: Exposure pathways for all receptors are considered incomplete for subsurface soil. Plants may send roots into subsurface soil (deeper than 6 inches) and some invertebrates burrow into deeper soil. However, activity in deeper soil is considered negligible and most nutrient uptake by plants and most foraging by invertebrates are assumed to occur within the upper bioactive layer of soil (from the surface to 6 inches below grade). Although burrowing animals may access deeper soils, exposure to subsurface soil is considered negligible compared to exposure to surface soil. There are no known burrowing birds (no identified seabird nesting colonies) or mammals on site.

Groundwater: COPCs in the groundwater table will occur at depths of approximately 5 feet or more bgs. Due to the depth to groundwater, the exposure pathways are considered incomplete for terrestrial plants and animals.

Surface Water and Sediment: Chemical transport with groundwater could potentially result in COPCs entering Kaneohe Bay, because Bldg. 4074 is approximately 1,600 feet from Kaneohe Bay. Although this distance would generally preclude concern for most chemicals, perfluorinated compounds are known to be highly mobile. The exposure pathways for direct contact and ingestion or uptake of COPCs in surface water and sediment are potentially complete for aquatic plants and animals and sediment biota. If groundwater discharge areas are shallow enough for birds to wade in, shorebirds/waterbirds could be exposed via incidental ingestion of surface water and sediment, and ingestion of biota with accumulated concentrations of COPCs in their tissues. This exposure pathway would only be complete, however, if groundwater discharges at shoreline locations that are shallow. If they are in deeper water, any exposure would be insignificant because birds would not access the specific discharge areas.

Runway

The ecological CSM for MCBH Runways (Figure 3-7 and Figure 3-15) evaluates six potential terrestrial receptor groups:

- Terrestrial plants
- Soil invertebrates
- Omnivorous mammals
- Omnivorous birds

- Shorebirds
- Predatory birds

Shorebirds are considered separately from omnivorous birds because of the possible presence of the endangered Hawaiian stilt.

The ecological CSM for MCBH Runways also evaluates five potential aquatic receptor groups:

- Aquatic life (e.g., invertebrates such as jellyfish and zooplankton, algae, and aquatic plants)
- Sediment biota
- Fish (all trophic levels)
- Shorebirds/waterbirds
- Predatory birds

Surface Soil: Plants are exposed to surface soil through direct contact by roots and soil invertebrates may be exposed by direct contact with outer body surfaces. Therefore, the exposure pathway is considered potentially complete for plants and invertebrates through direct contact. Direct contact with soil by wildlife is considered insignificant. Although dermal absorption of surface soil chemicals is potentially complete for all wildlife receptors, the pathway is not evaluated quantitatively for two reasons:

- Scientific data to estimate exposure of wildlife to COPCs through dermal absorption are lacking.
- Because of the outer layer of fur or feathers, exposure of wildlife to COPCs through dermal absorption is expected to be insignificant compared to exposure by ingestion pathways.

Soil invertebrates may be exposed to COPCs by the ingestion of soil, plants, and other soil biota. Wildlife is potentially exposed to chemicals in surface soil through incidental ingestion of soil and ingestion of biota that have accumulated chemicals from surface soil. Therefore, the exposure pathway for soil invertebrates and wildlife is considered potentially complete through incidental ingestion and food web transfers.

Subsurface Soil: Exposure pathways for all receptors are considered incomplete for subsurface soil. Although burrowing animals may access deeper soils, exposure to subsurface soil is considered negligible compared to exposure to surface soil. There are no known burrowing birds (no identified seabird nesting colonies) or mammals on site. Plants may send roots into subsurface soil (deeper than 6 inches) and some invertebrates burrow into deeper soil. However, most nutrient uptake by plants and most foraging by invertebrates are assumed to occur within the upper bioactive layer of soil (from the surface to 6 inches below grade).

Groundwater: COPCs in the groundwater table will occur at depths of approximately 5 feet bgs or more. Due to the depth to groundwater, the exposure pathways are considered incomplete for terrestrial plants and animals.

Surface Water and Sediment: Chemical transport with groundwater could potentially result in COPCs entering Kaneohe Bay, because portions of MCBH Runways are less than 150 feet from Kaneohe Bay. COPCs could migrate to the shoreline in surface runoff attached to soil particles, or dissolve in water,

although this pathway is limited by the flat topography at the site, the distance to the shoreline, and the high permeability of the soil between the site and the shoreline.

The exposure pathways for direct contact and ingestion or uptake of COPCs in surface water and sediment are potentially complete for aquatic plants and animals and for sediment biota. If groundwater discharge areas are shallow enough for birds to wade in, shorebirds/waterbirds could be exposed via incidental ingestion of surface water and sediment and ingestion of biota with accumulated concentrations of COPCs in their tissues. This exposure pathway would only be complete, however, if groundwater discharges at shoreline locations that are shallow. If they are in deeper water, any exposure would be insignificant because birds would not access the specific discharge areas.

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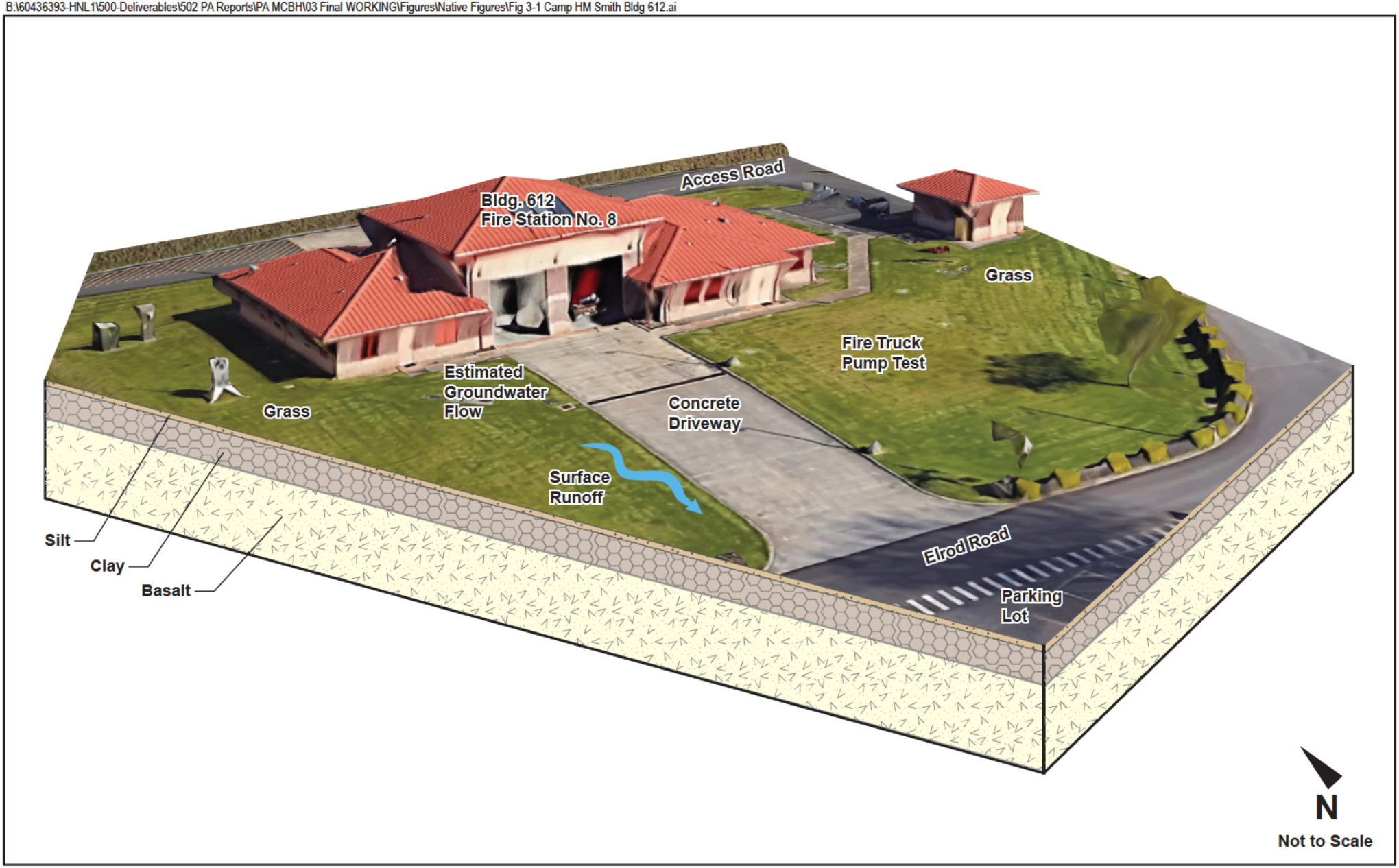

Figure 3-1
Camp H. M. Smith Bldg. 612 Fire Station #16
Conceptual Site Model
Preliminary Assessment
Potential PFAS Sites
Marine Corps Base Hawaii
Oahu, Hawaii

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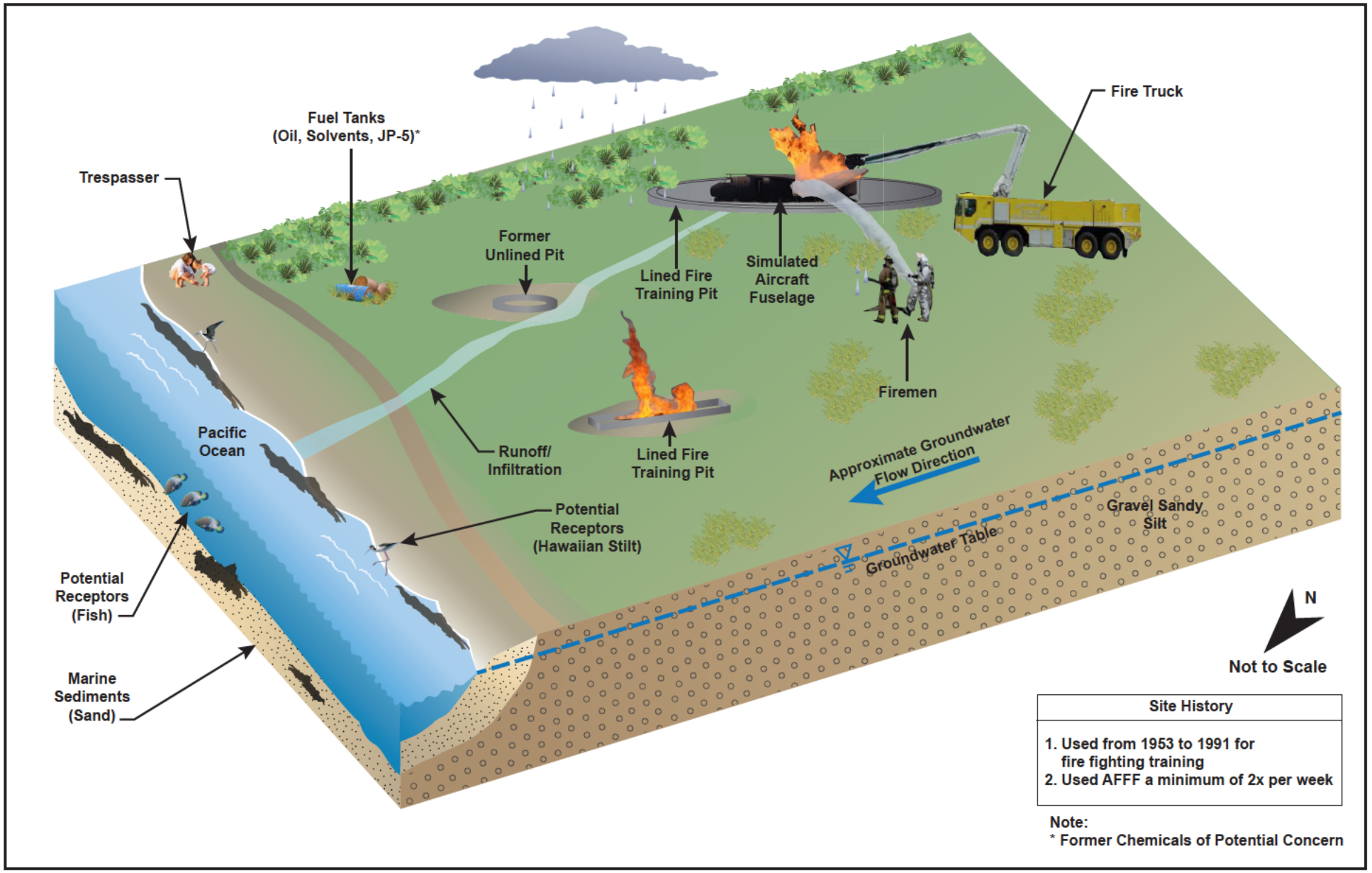
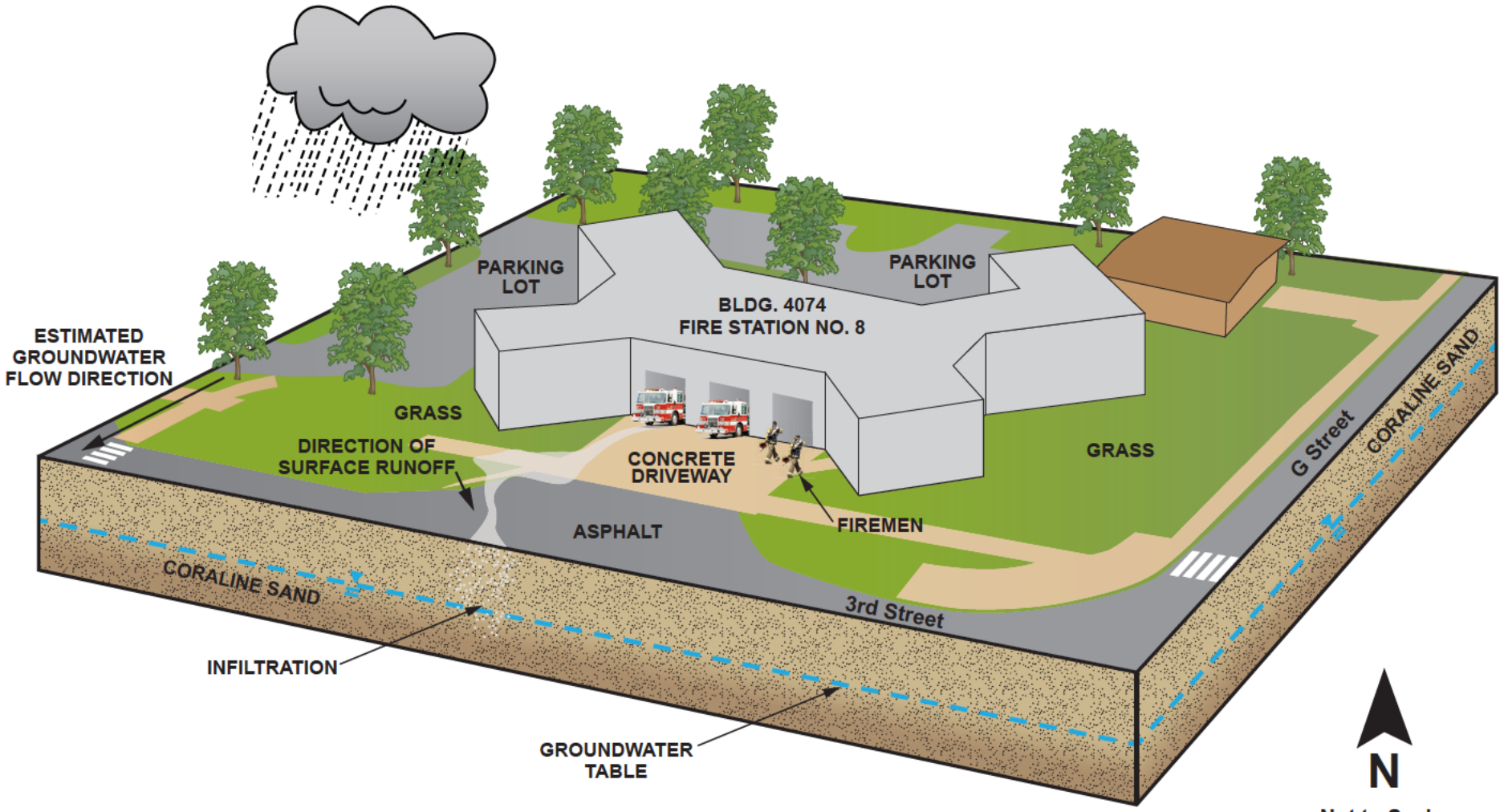


Figure 3-2
Bldg. 1617 Fire Fighting Training Area
Conceptual Site Model
Preliminary Assessment
Potential PFAS Sites
Marine Corps Base Hawaii
Oahu, Hawaii



N

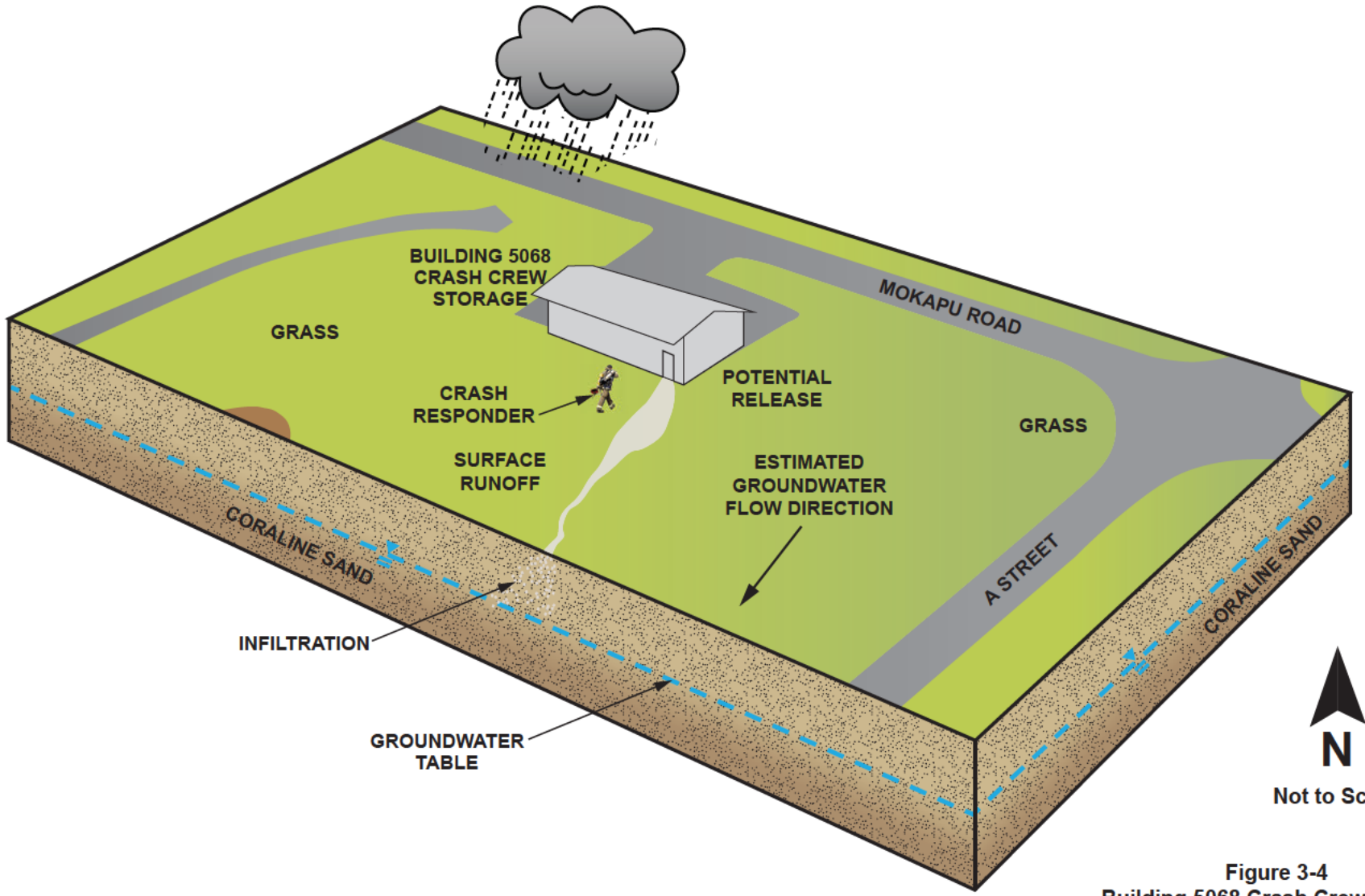
Not to Scale

Figure 3-3
Building 4074 Fire Station No. 8
Conceptual Site Model
Preliminary Assessment
Potential PFAS Sites
Marine Corps Base Hawaii
Oahu, Hawaii

Site History

Storage of AFFF in Fire Trucks

B:\60436393-HNL11900-Work\921 Graphics\MCBH\Building 4074 Fire Station\Fig 3-3_Bldg 4074 Fire Station CSM



Site History

AFFF Storage

Figure 3-4
Building 5068 Crash Crew Storage
Conceptual Site Model
Preliminary Assessment
Potential PFAS Sites
Marine Corps Base Hawaii
Oahu, Hawaii

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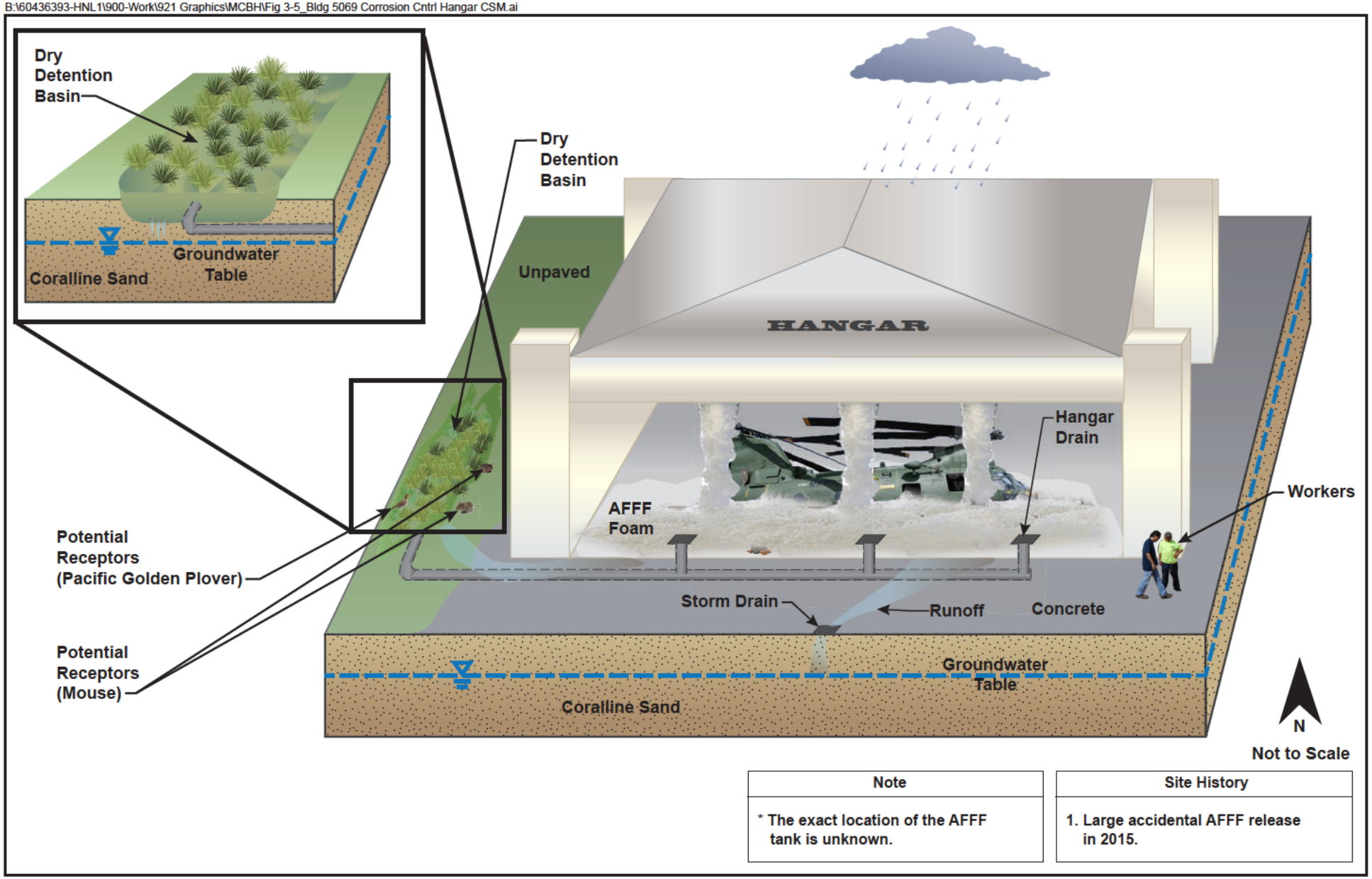
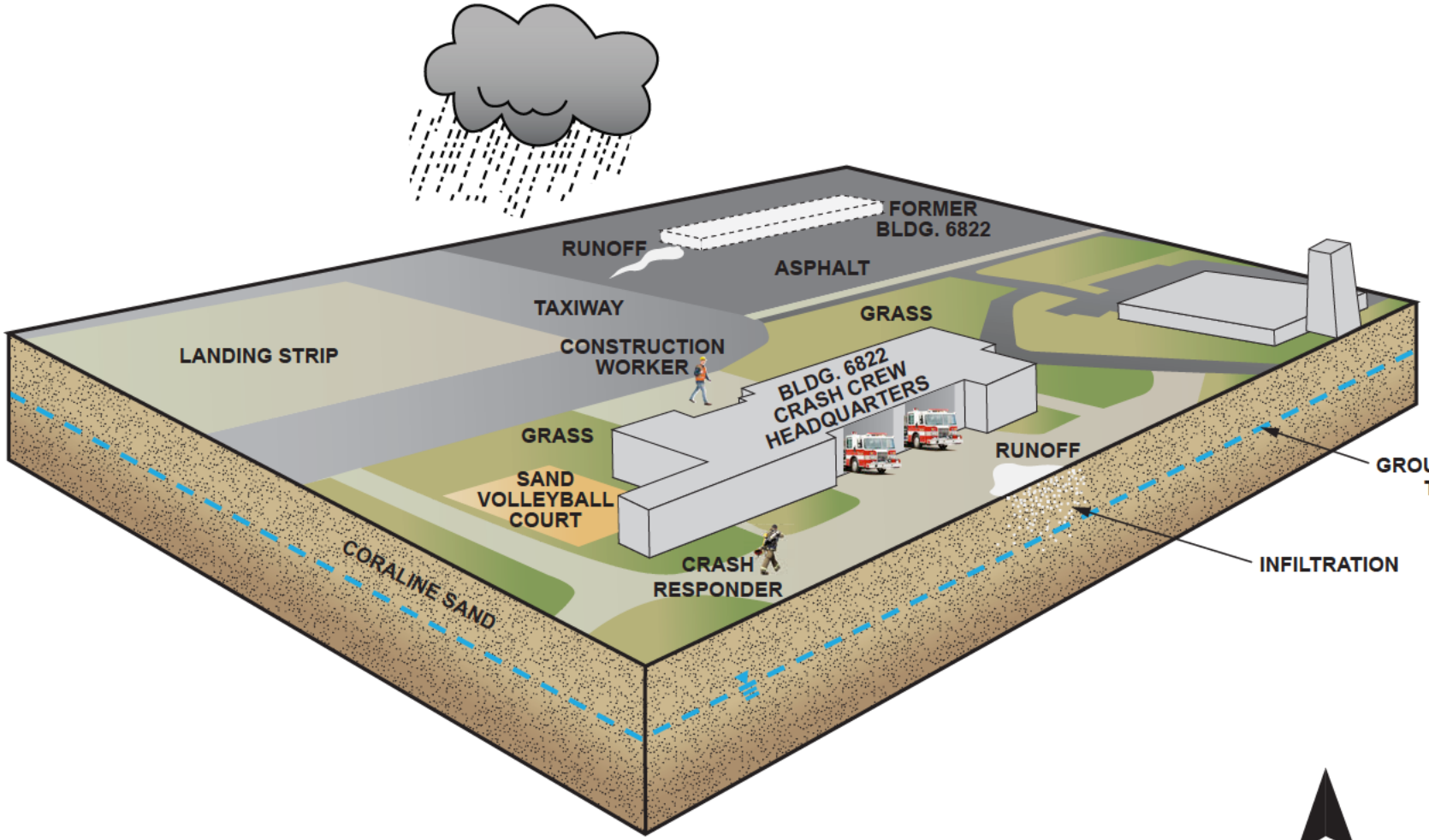
B:\60436393-HNL1\900-Work\921 Graphics\MCBH\Fig 3-5_Bldg 5069 Corrosion Cntrl Hangar CSM.ai



Note	Site History
* The exact location of the AFFF tank is unknown.	1. Large accidental AFFF release in 2015.

Figure 3-5
Bldg. 5069 Corrosion Control Hangar
Conceptual Site Model
Preliminary Assessment
Potential PFAS Sites
Marine Corps Base Hawaii
Oahu, Hawaii



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Not to Scale

Site History

Potential AFFF Releases on Runway at Crash/Emergency Landing Locations

Figure 3-6
Building 6822 Crash Crew Headquarters
Conceptual Site Model
Preliminary Assessment
Potential PFAS Sites
Marine Corps Base Hawaii
Oahu, Hawaii

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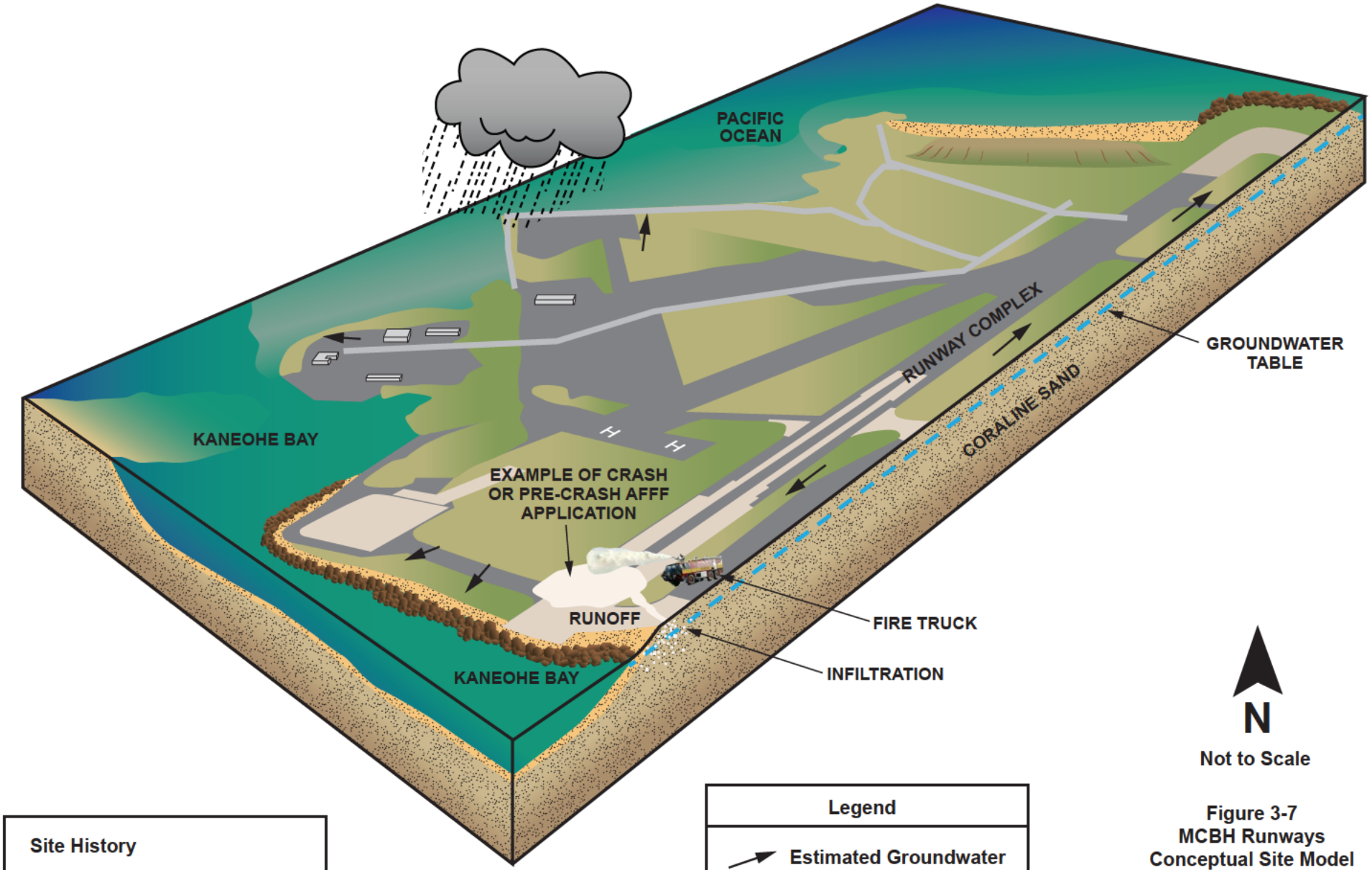

Site History

Potential AFFF Releases on Runway at Crash/Emergency Landing Locations

Legend
Estimated Groundwater Flow Direction

N

Not to Scale

Figure 3-7
MCBH Runways
Conceptual Site Model
Preliminary Assessment
Potential PFAS Sites
Marine Corps Base Hawaii
Oahu, Hawaii

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Contributing Source	Transport Mechanism	Exposure Route	Scenario	Receptor: Residential (Adult/Child)	Receptor: Onsite Occupational Worker	Receptor: Onsite Construction Worker	Receptor: Casual Visitor (Adult/Child) (e.g., trespasser or recreational user)
AFFF use and storage at Camp H. M. Smith Fire Station #16							
Surface Soil	Direct Contact	Incidental Ingestion:	Current:	N/A	Potentially Complete	Potentially Complete	Potentially Complete
			Future:	Potentially Complete	Potentially Complete	Potentially Complete	Potentially Complete
		Rationale:		Exposure to PFAS in surface soil (0 to 0.5 feet below ground surface [bgs]) via incidental ingestion (PFCs are only slowly absorbed dermally, so this pathway is considered insignificant) is a potentially complete exposure pathway for hypothetical future residents (there are no current residents), current and future occupational workers, current and future construction workers, and current and future casual visitors.			
	Air Transport	Inhalation of VOCs:	Current:	N/A	Incomplete	Incomplete	Incomplete
			Future:	Incomplete	Incomplete	Incomplete	Incomplete
		Rationale:		VOCs are not COPCs for this investigation. These pathways are not complete.			
		Inhalation of Particulates:	Current:	N/A	Potentially Complete	Potentially Complete	Potentially Complete
			Future:	Potentially Complete	Potentially Complete	Potentially Complete	Potentially Complete
		Rationale:		The inhalation of PFAS bound to airborne particulates from surface soil is considered a potentially complete exposure pathway for all current and future receptors. Windy conditions, which are prevalent on Oahu, may suspend exposed soil particulate matter into air, especially if soil is disturbed (e.g., through gardening and construction excavations).			
	Bio-uptake	Ingestion of Plants/Animals:	Current:	N/A	Incomplete	Incomplete	Incomplete
			Future:	Insignificant	Incomplete	Incomplete	Incomplete

Figure 3-8
Camp H. M. Smith Bldg. 612 Fire Station #16
Human Health Exposure Pathway Evaluation
Preliminary Assessment
Potential PFAS Sites
Marine Corps Base Hawaii
Oahu, Hawaii

Contributing Source	Transport Mechanism	Exposure Route	Scenario	Receptor: Residential (Adult/Child)	Receptor: Onsite Occupational Worker	Receptor: Onsite Construction Worker	Receptor: Casual Visitor (Adult/Child) (e.g., trespasser or recreational user)
AFFF use and storage at Camp H. M. Smith Fire Station #16							
Subsurface Soil	Direct Contact	Incidental Ingestion:	Current:	N/A	Incomplete	**Potentially Complete**	Incomplete
			Future:	**Potentially Complete**	Incomplete	**Potentially Complete**	Incomplete
		Rationale:	Hypothetical future residents could contact subsurface soil during various domestic activities (e.g., gardening) or if subsurface soil were brought to the surface. Current and future occupational workers and site visitor/trespassers are not expected to contact soil deeper than 0–0.5 feet bgs; exposure to PFAS in subsurface soil is incomplete for these receptors. Current and future construction workers may be exposed to PFAS in subsurface soil during construction or excavation activities.				
	Air Transport	Inhalation of VOCs:	Current:	N/A	Incomplete	Incomplete	Incomplete
			Future:	Incomplete	Incomplete	Incomplete	Incomplete
		Rationale:	VOCs are not COPCs for this investigation, so these pathways are not complete.				
		Inhalation of Particulates:	Current:	N/A	Incomplete	**Potentially Complete**	Incomplete
			Future:	**Potentially Complete**	Incomplete	**Potentially Complete**	Incomplete
		Rationale:	If subsurface soil is exposed, the inhalation of PFAS bound to airborne particulates from subsurface soil is considered a potentially complete exposure pathway for hypothetical future residents and current and future construction workers. Windy conditions, which are prevalent on Oahu, may suspend exposed soil particulate matter into air, especially if soil is disturbed (e.g., gardening and construction excavations). Current and future occupational workers and casual site visitors are not expected to contact soil deeper than 0-0.5 feet bgs; therefore, exposure to COPCs in subsurface soil is an incomplete pathway for these receptors.				
	Leaching to Groundwater	Ingestion:	Current:	N/A	Incomplete	Incomplete	Incomplete
			Future:	Incomplete	Incomplete	Incomplete	Incomplete
		Rationale:	Groundwater beneath Camp H. M. Smith is used to supply drinking water and is classified as a Class I aquifer. Because of the depth to groundwater (>500 feet bgs), however, the potential for PFAS migration to the aquifer is limited and is not evaluated in this SI. If results of soil sampling and analysis in the SI suggest the potential for significant migration to groundwater, potential exposure to groundwater will be reevaluated. The depth to groundwater (>500 feet bgs) at the site is beyond the depth of a construction excavation, there are no points of contact with groundwater (e.g., springs) at the site. Therefore, direct contact with groundwater is an incomplete exposure pathway for all current and future site receptors. The potential for downgradient, off-site exposures at locations where groundwater discharges to surface water will be reconsidered if the SI data suggest the potential for significant chemical migration via groundwater to these locations.				
		Inhalation of VOCs:	Current:	N/A	Incomplete	Incomplete	Incomplete
			Future:	Incomplete	Incomplete	Incomplete	Incomplete
		Rationale:	VOCs are not COPCs for this investigation, so these pathways are not complete.				
	Surface Runoff or Groundwater Discharge to Surface Water	Ingestion:	Current:	N/A	Incomplete	Incomplete	Insignificant
			Future:	Incomplete	Incomplete	Incomplete	Insignificant
		Rationale:	Surface migration of PFAS in soil at the site to surface water bodies is unlikely; historical releases were in the subsurface and even if soil excavation associated with the removal of the UST brought contamination to the surface, PFAS in surface soil would be expected to infiltrate into the subsurface and not reach any surface water bodies via surface runoff. Because of the depth to groundwater (>500 feet) and the distance to locations where groundwater might discharge to surface water (over 1,000 feet northwest to Aiea Stream, over 2,000 feet southeast to North Halawa Stream), the potential for significant migration by this pathway is considered insignificant. However, the potential for downgradient, off-site exposures at locations where groundwater discharges to surface water will be reconsidered if the SI data suggest a potential for significant chemical migration via groundwater to these locations.				
		Inhalation of VOCs:	Current:	N/A	Incomplete	Incomplete	Incomplete
			Future:	Incomplete	Incomplete	Incomplete	Incomplete
		Rationale:	VOCs are not COPCs for this investigation, so these pathways are not complete.				

Notes:

bgs	below ground surface
COPC	chemical of potential concern
N/A	not applicable
PFAS	per- and polyfluoroalkyl substances
PFC	perfluorinated compound
SI	site inspection
UST	underground storage tank
VOC	volatile organic compound

Figure 3-8 (cont'd)
Camp H. M. Smith Bldg. 612 Fire Station #16
Human Health Exposure Pathway Evaluation
Preliminary Assessment
Potential PFAS Sites
Marine Corps Base Hawaii
Oahu, Hawaii

Contributing Source	Transport Mechanism	Exposure Route	Scenario	Receptor: Resident (Adult/Child)	Receptor: Onsite Occupational Worker	Receptor: Onsite Construction Worker	Receptor: Recreational Visitor (Adult/Child)
Bldg. 1617 Fire Training Area							
Surface Soil	Direct Contact	Incidental Ingestion: Dermal Contact:	Current:	N/A	**Potentially Complete**	N/A	**Potentially Complete**
			Future:	**Potentially Complete**	**Potentially Complete**	**Potentially Complete**	**Potentially Complete**
		Rationale:	Incidental ingestion and dermal contact of COPCs in surface soil (0 to 0.5 feet bgs) is a potentially complete exposure pathway for current and future occupational and construction workers, as well as current and future recreational visitors and potential future residents.				
	Air Transport	Inhalation of VOCs:	Current:	N/A	Incomplete	N/A	Incomplete
			Future:	Incomplete	Incomplete	Incomplete	Incomplete
		Rationale:	VOCs are not COPCs for this investigation at Bldg. 1617 FFTA, so this pathway is incomplete.				
		Inhalation of Particulates:	Current:	N/A	**Potentially Complete**	N/A	**Potentially Complete**
			Future:	**Potentially Complete**	**Potentially Complete**	**Potentially Complete**	**Potentially Complete**
		Rationale:	The inhalation of particulates from surface soil is considered a potentially complete exposure pathway for all current and future receptors. Low to moderate trade winds may cause the formation of fugitive dusts by suspending surface soil particulate matter in air. Shallow excavations and earthwork would also enhance the generation of soil dusts. Once airborne, receptors may be potentially exposed to site chemicals through the inhalation of soil particulates.				
	Bio-uptake	Ingestion of Plants/Animals:	Current:	N/A	Incomplete	N/A	Incomplete
			Future:	Insignificant	Incomplete	Incomplete	Incomplete
		Rationale:	Ingestion of potentially impacted plants and animals from the site is an incomplete exposure pathway for all current and future receptors. These receptors are not expected to engage in subsistence agriculture or hunting of wild plants or wildlife on site. Hypothetical future residents may eat garden produce but any exposure via this pathway is likely to be insignificant compared to other pathways (e.g., incidental ingestion).				
	Storm Water Runoff to Shoreline Sediment and Surface Water	Incidental Ingestion: Dermal Contact:	Current:	N/A	Insignificant	N/A	**Potentially Complete**
			Future:	**Potentially Complete**	Insignificant	Insignificant	**Potentially Complete**
		Rationale:	Recreational visitors and occupational workers may have contact with shoreline sediment and surface water. Recreational visitors may wade in the water while trespassing. Occupational workers could come in contact with surface water and sediment during training events or even during large storm surges or rain events where pooling of water could occur but exposure is likely insignificant. Onsite construction workers are not expected to spend a significant time along the shoreline, which is why the construction worker pathway is considered insignificant. During times of heavy rainfall, pooling of water could occur. Receptors could be exposed to surface water in puddles, but the exposure would be insignificant compared to exposure via other pathways. If land use were to change, a resident may come in contact with sediment and surface water while living nearby.				
		Inhalation of VOCs:	Current:	N/A	Incomplete	N/A	Incomplete
			Future:	Incomplete	Incomplete	Incomplete	Incomplete
		Rationale:	VOCs are not COPCs for this investigation at Bldg. 1617 FFTA, so this pathway is not complete.				
	Bio-uptake	Incidental Ingestion Fish/Shellfish:	Current:	N/A	Incomplete	N/A	Insignificant
			Future:	Insignificant	Incomplete	Incomplete	Insignificant
		Rationale:	Occupational and construction workers are not expected to fish or collect shellfish along the shoreline during the work day. Recreational users and potential future residents may fish or collect shellfish along the shoreline. However, recreational users and potential future residents are expected to find better fishing locations at other areas on the installation. As a result, the recreational and residential pathways are considered potentially complete but insignificant.				

Figure 3-9
Bldg. 1617 Fire Fighting Training Area
Human Health Exposure Pathway Evaluation
Preliminary Assessment
Potential PFAS Sites
Marine Corps Base Hawaii
Oahu, Hawaii

Contributing Source	Transport Mechanism	Exposure Route	Scenario	Receptor: Resident (Adult/Child)	Receptor: Onsite Occupational Worker	Receptor: Onsite Construction Worker	Receptor: Recreational Visitor (Adult/Child)
Bldg. 1617 Fire Training Area							
Subsurface Soil	Direct Contact	Incidental Ingestion: Dermal Contact:	Current:	N/A	Incomplete	N/A	Incomplete
			Future:	**Potentially Complete**	Incomplete	**Potentially Complete**	Incomplete
		Rationale:		Occupational workers and recreational visitors are not expected to come in contact with soil deeper than 0-0.5 feet bgs; exposure to COPCs in subsurface soil is incomplete for these receptors. Construction workers may be exposed to COPC in subsurface soil during construction or excavation activities. Potential future residents could come in contact with subsurface soil while gardening or if land-use were to change and subsurface soil was brought to the surface.			
	Air Transport	Inhalation of VOCs:	Current:	N/A	Incomplete	N/A	Incomplete
			Future:	Incomplete	Incomplete	Incomplete	Incomplete
		Rationale:		VOCs are not COPCs for this investigation at Bldg. 1617 FFTA, so this pathway is incomplete.			
		Inhalation of Particulates:	Current:	N/A	Incomplete	N/A	Incomplete
			Future:	**Potentially Complete**	Incomplete	**Potentially Complete**	Incomplete
		Rationale:		Occupational workers and recreational visitors are not expected to come in contact with soil deeper than 0-0.5 feet bgs; exposure to COPCs in subsurface soil is incomplete for these receptors. Construction workers may be exposed to COPCs in subsurface soil during construction or excavation activities. Potential future residents could come in contact with subsurface soil while gardening or if land-use were to change and subsurface soil was brought to the surface.			
	Leaching to Groundwater	Ingestion: Dermal Contact:	Current:	N/A	Incomplete	N/A	Incomplete
			Future:	Incomplete	Incomplete	**Potentially Complete**	Incomplete
		Rationale:		Incidental ingestion of, and dermal contact with, shallow groundwater is possible for a construction worker during excavation. Occupational workers, potential future residents and recreational users are unlikely to contact groundwater. Groundwater is not a current source of drinking water and there are no points of contact with groundwater (e.g., springs) on site.			
		Inhalation of VOCs:	Current:	N/A	Incomplete	N/A	Incomplete
			Future:	Incomplete	Incomplete	Incomplete	Incomplete
		Rationale:		VOCs are not COPCs for this investigation at Bldg. 1617 FFTA, so this pathway is incomplete.			
	Groundwater Discharge to Surface Water	Ingestion: Dermal Contact:	Current:	N/A	Incomplete	N/A	**Potentially Complete**
			Future:	**Potentially Complete**	Incomplete	Incomplete	**Potentially Complete**
		Rationale:		Recreational visitors and potential future residents may have contact with surface water. Recreational visitors may wade in the water while trespassing. Occupational workers and construction workers are not expected to spend anytime along the shoreline, which is why the construction worker pathway is considered incomplete. If land use were to change, a resident may come in contact with surface water while living nearby.			
		Inhalation of VOCs:	Current:	N/A	Incomplete	N/A	Incomplete
			Future:	Incomplete	Incomplete	Incomplete	Incomplete
		Rationale:		VOCs are not COPCs for this investigation at Bldg. 1617 FFTA, so this pathway is not complete.			

bgs	below ground surface
bldg.	building
COPC	chemical of potential concern
FFTA	fire fighting training area
N/A	not applicable
VOC	volatile organic compound

Figure 3-9 (cont'd)
Bldg. 1617 Fire Fighting Training Area
Human Health Exposure Pathway Evaluation
Preliminary Assessment
Potential PFAS Sites
Marine Corps Base Hawaii
Oahu, Hawaii

Contributing Source	Transport Mechanism	Exposure Route		Receptor: Residential (Adult/Child)	Receptor: Onsite Occupational Worker	Receptor: Onsite Construction Worker	Receptor: Visitor/Trespasser (Adult/Child)
			Scenario				
Bldgs. 4074, 5068, 5069, and 6822							
Surface Soil (including Dry Detention Basin at Bldg. 5069)	Direct Contact	Incidental Ingestion: Dermal Contact:	Current:	N/A	Potentially Complete	Potentially Complete	Potentially Complete
			Future:	Potentially Complete	Potentially Complete	Potentially Complete	Potentially Complete
		Rationale:		Exposure to COPCs in surface soil (0 to 0.5 feet bgs) via incidental ingestion and dermal absorption are potentially complete exposure pathways for hypothetical future residents (there are no current residents), current and future occupational workers and visitors/trespassers, and current and future construction workers (construction is currently taking place around Bldg. 6822). Site visitors may access Bldg. 5068, Bldg. 5069, and Bldg. 4047, but access to Bldg. 6822 is restricted and there are no current site visitors there. Future site visitors are possible at all locations, depending on land use changes.			
	Air Transport	Inhalation of VOCs:	Current:	N/A	Incomplete	Incomplete	Incomplete
			Future:	Incomplete	Incomplete	Incomplete	Incomplete
		Rationale:		VOCs are not COPCs for this investigation at Bldgs. 5069, 5068, 6822, and 4047, so this pathway is not complete.			
		Inhalation of Particulates:	Current:	N/A	Potentially Complete	Potentially Complete	Potentially Complete
			Future:	Potentially Complete	Potentially Complete	Potentially Complete	Potentially Complete
		Rationale:		The inhalation of COPCs bound to particulates from surface soil is considered a potentially complete exposure pathway for all current and future receptors. The low-to-moderate winds cause the formation of fugitive dusts by suspending surface soil particulate matter in air. Shallow excavations and earthwork would also enhance the generation of soil dusts. Once airborne, receptors may be potentially exposed to site contamination through the inhalation of soil particulates.			
	Bio-uptake	Ingestion of Plants/Animals:	Current:	N/A	Incomplete	Incomplete	Incomplete
			Future:	Insignificant	Incomplete	Incomplete	Incomplete
		Rationale:		Hypothetical future residents (there are no current residents) may have gardens, but potential exposure to COPCs in garden produce is considered insignificant compared to direct ingestion pathways. Ingestion of potentially contaminated plants and animals from the site is an incomplete exposure pathway for all other current and future receptors. These receptors are not expected to engage in gardening or harvesting of wild plants or wildlife on site.			

Figure 3-10
Bldg. 4074 Fire Station No. 8, Bldg. 5068 Crash Crew Storage, Bldg. 5069 Corrosion Control Hangar, and Bldg. 6822 Crash Crew Headquarters
Human Health Exposure Pathway Evaluation
Preliminary Assessment
Potential PFAS Sites
Marine Corps Base Hawaii
Oahu, Hawaii

Contributing Source	Transport Mechanism	Exposure Route	Scenario	Receptor: Residential (Adult/Child)	Receptor: Onsite Occupational Worker	Receptor: Onsite Construction Worker	Receptor: Visitor/Trespasser (Adult/Child)
Bldgs. 4074, 5068, 5069, and 6822							
Subsurface Soil	Direct Contact	Incidental Ingestion: Dermal Contact:	Current:	N/A	Incomplete	**Potentially Complete**	Incomplete
			Future:	**Potentially Complete**	Incomplete	**Potentially Complete**	Incomplete
		Rationale:	Hypothetical future residents could contact subsurface soil during various domestic activities (e.g., gardening) or if subsurface soil were brought to the surface. Current and future occupational workers and site visitor/trespassers are not expected to contact soil deeper than 0–0.5 feet bgs; exposure to COPCs in subsurface soil is incomplete for these receptors. Current and future construction workers may be exposed to COPCs in subsurface soil during construction or excavation activities (construction is currently taking place around Bldg. 6822).				
	Air Transport	Inhalation of VOCs:	Current:	N/A	Incomplete	Incomplete	Incomplete
			Future:	Incomplete	Incomplete	Incomplete	Incomplete
		Rationale:	VOCs are not COPCs for this investigation at Bldgs. 5068, 6822, and 4047, so this pathway is not complete.				
		Inhalation of Particulates:	Current:	N/A	Incomplete	**Potentially Complete**	Incomplete
			Future:	**Potentially Complete**	Incomplete	**Potentially Complete**	Incomplete
		Rationale:	If subsurface soil is exposed, inhalation of COPCs bound to airborne soil particulates is considered a potentially complete exposure pathway for hypothetical future residents (there are no current residents) and current (Bldg. 6822) and future construction workers. Trade winds may cause the formation of fugitive dusts by suspending exposed soil particulate matter in air. Disturbances (e.g., gardening and construction excavations) would also enhance the generation of soil dusts. Current and future occupational workers and site visitors are not expected to contact soil deeper than 0-0.5 feet bgs; exposure to COPCs in subsurface soil is incomplete for these receptors.				
	Leaching to Groundwater	Ingestion: Dermal Contact:	Current:	N/A	Incomplete	**Potentially Complete**	Incomplete
			Future:	Incomplete	Incomplete	**Potentially Complete**	Incomplete
		Rationale:	Direct contact with shallow groundwater in a construction excavation via incidental ingestion dermal absorption is a potential complete exposure pathway for current and future construction workers. Hypothetical future residents, current and future occupational workers, and current and future site visitors are unlikely to contact groundwater. Groundwater is not a current source (or anticipated future source) of drinking water and there are no points of contact with groundwater (e.g., springs) at any of the three building sites.				
		Inhalation of VOCs:	Current:	N/A	Incomplete	Incomplete	Incomplete
			Future:	Incomplete	Incomplete	Incomplete	Incomplete
		Rationale:	VOCs are not COPCs for this investigation at Bldgs. 5068, 6822, and 4047, so this pathway is not complete.				
	Groundwater Discharge to Surface Water	Ingestion: Dermal Contact:	Current:	N/A	Incomplete	Incomplete	**Potentially Complete**
			Future:	**Potentially Complete**	Incomplete	Incomplete	**Potentially Complete**
		Rationale:	If groundwater with site COPCs discharges to shoreline areas that are shallow enough for human access, current and future site visitors, which could include hypothetical future residents, may be exposed to COPCs that migrate to shoreline sediment and surface water through incidental ingestion and dermal contact. Any such exposure, however, is considered insignificant because of the lack of suitable shoreline areas for wading/swimming and the distance from the sites to any likely shoreline groundwater discharge areas; Bldg. 4047 is the closest of the three buildings to the shoreline (about 1,600 feet north of the shoreline).				
		Inhalation of VOCs:	Current:	N/A	Incomplete	Incomplete	Incomplete
			Future:	Incomplete	Incomplete	Incomplete	Incomplete
		Rationale:	VOCs are not COPCs for this investigation at Bldgs. 5068, 6822, and 4047, so this pathway is not complete.				

bgs	below ground surface
Bldg.	building
COPC	chemical of potential concern
N/A	not applicable
VOC	volatile organic compound

Figure 3-10 (cont'd)
Bldg. 4074 Fire Station No. 8, Bldg. 5068 Crash Crew Storage, Bldg. 5069 Corrosion Control Hangar, and Bldg. 6822 Crash Crew Headquarters
Human Health Exposure Pathway Evaluation
Preliminary Assessment
Potential PFAS Sites
Marine Corps Base Hawaii
Oahu, Hawaii

Contributing Source	Transport Mechanism	Exposure Route	Scenario	Receptor: Resident (Adult/Child)	Receptor: Onsite Occupational Worker	Receptor: Onsite Construction Worker	Receptor: Recreational Visitor (Adult/Child)
MCBH Runways Runoff							
Surface Soil	Direct Contact	Incidental Ingestion: Dermal Contact:	Current:	N/A	**Potentially Complete**	**Potentially Complete**	**Potentially Complete**
			Future:	**Potentially Complete**	**Potentially Complete**	**Potentially Complete**	**Potentially Complete**
		Rationale:	Exposure to COPCs in surface soil (0 to 0.5 feet bgs) via incidental ingestion and dermal absorption are potentially complete exposure pathways for hypothetical future residents (there are no current residents), current and future occupational and construction workers, and current and future recreational visitors.				
	Air Transport	Inhalation of VOCs:	Current:	N/A	Incomplete	Incomplete	Incomplete
			Future:	Incomplete	Incomplete	Incomplete	Incomplete
		Rationale:	VOCs are not COPCs for this investigation at MCBH Runways, so this pathway is incomplete.				
		Inhalation of Particulates:	Current:	N/A	**Potentially Complete**	**Potentially Complete**	**Potentially Complete**
			Future:	**Potentially Complete**	**Potentially Complete**	**Potentially Complete**	**Potentially Complete**
		Rationale:	The inhalation of COPCs bound to particulates from surface soil is considered a potentially complete exposure pathway for all current and future receptors. Low to moderate trade winds may cause the formation of fugitive dusts by suspending surface soil particulate matter in air. Shallow excavations and earthwork would also enhance the generation of soil dusts. Once airborne, receptors may be potentially exposed to site contamination through the inhalation of soil particulates.				
	Bio-uptake	Ingestion of Plants/Animals:	Current:	N/A	Incomplete	Incomplete	Incomplete
			Future:	Insignificant	Incomplete	Incomplete	Incomplete
		Rationale:	Hypothetical future residents (there are no current residents) may have gardens but potential exposure to COPCs in garden produce is considered insignificant compared to direct ingestion pathways. Ingestion of potentially contaminated plants and animals from the site is an incomplete exposure pathway for all other current and future receptors. These receptors are not expected to engage in gardening or harvesting of wild plants or wildlife on site.				
	Storm Water Runoff to Shoreline Sediment and Surface Water	Incidental Ingestion: Dermal Contact:	Current:	N/A	Insignificant	Insignificant	**Potentially Complete**
			Future:	**Potentially Complete**	Insignificant	Insignificant	**Potentially Complete**
		Rationale:	Current and future recreational visitors, who could include hypothetical future residents, may have contact with COPCs that migrate to shoreline sediment and surface water through incidental ingestion and dermal contact while wading and swimming along the shoreline. Current and future occupational workers could come in contact with surface water and sediment, although work activities are not anticipated to occur along the shoreline; therefore, this exposure pathway is considered insignificant compared to surface soil exposure pathways. Construction activities are not expected to occur along the shoreline, so exposure pathways for current and future construction workers are considered insignificant. During times of heavy rainfall, pooling of water could occur in on-site and off-site areas. Receptors could be exposed to surface water in puddles, but the exposure would be insignificant compared to exposure via other pathways.				
		Inhalation of VOCs:	Current:	N/A	Incomplete	Incomplete	Incomplete
			Future:	Incomplete	Incomplete	Incomplete	Incomplete
		Rationale:	VOCs are not COPCs for this investigation at MCBH Runways, so this pathway is not complete.				
	Bio-uptake	Incidental Ingestion Fish/Shellfish:	Current:	N/A	Incomplete	Incomplete	Insignificant
			Future:	Insignificant	Incomplete	Incomplete	Insignificant
		Rationale:	Current and future recreational users and hypothetical future residents may fish or collect shellfish along the shoreline. However, they are expected to find better fishing locations at other areas on the installation. As a result, the recreational and residential pathways are considered potentially complete but insignificant. Occupational and construction workers are not expected to fish or collect shellfish along the shoreline during the work day.				

Figure 3-11
MCBH Runways
Human Health Exposure Pathway Evaluation
Preliminary Assessment
Potential PFAS Sites
Marine Corps Base Hawaii
Oahu, Hawaii

Contributing Source	Transport Mechanism	Exposure Route	Scenario	Receptor: Resident (Adult/Child)	Receptor: Onsite Occupational Worker	Receptor: Onsite Construction Worker	Receptor: Recreational Visitor (Adult/Child)
MCBH Runways Runoff							
Subsurface Soil	Direct Contact	Incidental Ingestion: Dermal Contact:	Current:	N/A	Incomplete	**Potentially Complete**	Incomplete
			Future:	**Potentially Complete**	Incomplete	**Potentially Complete**	Incomplete
		Rationale:	Hypothetical future residents could contact subsurface soil, through incidental ingestion and dermal contact, during various domestic activities (e.g., gardening) or if subsurface soil were brought to the surface. Current and future occupational workers and recreational visitors are not expected to contact soil deeper than 0–0.5 feet bgs; exposure to COPCs in subsurface soil is incomplete for these receptors. Current and future construction workers may be exposed to COPCs in subsurface soil during construction or excavation activities.				
	Air Transport	Inhalation of VOCs:	Current:	N/A	Incomplete	Incomplete	Incomplete
			Future:	Incomplete	Incomplete	Incomplete	Incomplete
		Rationale:	VOCs are not COPCs for this investigation at MCBH Runways, so this pathway is incomplete.				
		Inhalation of Particulates:	Current:	N/A	Incomplete	**Potentially Complete**	Incomplete
			Future:	**Potentially Complete**	Incomplete	**Potentially Complete**	Incomplete
		Rationale:	If subsurface soil is exposed, inhalation of COPCs bound to airborne soil particulates is considered a potentially complete exposure pathway for hypothetical future residents (there are no current residents) and current and future construction workers. Trade winds may cause the formation of fugitive dusts by suspending exposed soil particulate matter in air. Disturbances (e.g., gardening and construction excavations) would also enhance the generation of soil dusts. Current and future occupational workers and recreational visitors are not expected to contact soil deeper than 0–0.5 feet bgs; exposure to COPCs in subsurface soil is incomplete for these receptors.				
	Leaching to Groundwater	Ingestion: Dermal Contact:	Current:	N/A	Incomplete	**Potentially Complete**	Incomplete
			Future:	Incomplete	Incomplete	**Potentially Complete**	Incomplete
		Rationale:	Direct contact with shallow groundwater in a construction excavation via incidental ingestion dermal absorption is a potential complete exposure pathway for current and future construction workers. Hypothetical future residents, current and future occupational workers, and current and future recreational users are unlikely to contact groundwater. Groundwater is not a current source (or anticipated future source) of drinking water and there are no points of contact with groundwater (e.g., springs) on site.				
		Inhalation of VOCs:	Current:	N/A	Incomplete	Incomplete	Incomplete
			Future:	Incomplete	Incomplete	Incomplete	Incomplete
		Rationale:	VOCs are not COPCs for this investigation at MCBH Runways, so this pathway is incomplete.				
	Groundwater Discharge to Surface Water	Ingestion: Dermal Contact:	Current:	N/A	Incomplete	Incomplete	**Potentially Complete**
			Future:	**Potentially Complete**	Incomplete	Incomplete	**Potentially Complete**
		Rationale:	If groundwater with site COPCs discharges to shoreline areas that are shallow enough for human access, current and future recreational visitors, who could include hypothetical future residents, may be exposed to COPCs that migrate to shoreline sediment and surface water through incidental ingestion and dermal contact. Exposure pathways for would be the same as those described above for surface runoff to shoreline areas.				
		Inhalation of VOCs:	Current:	N/A	Incomplete	Incomplete	Incomplete
			Future:	Incomplete	Incomplete	Incomplete	Incomplete
		Rationale:	VOCs are not COPCs for this investigation at MCBH Runways, so this pathway is not complete.				

bgs	below ground surface
Bldg.	building
COPC	chemical of potential concern
MCBH	Marine Corps Base Hawaii
N/A	not applicable
VOC	volatile organic compound

Figure 3-11 (cont'd)
MCBH Runways
Human Health Exposure Pathway Evaluation
Preliminary Assessment
Potential PFAS Sites
Marine Corps Base Hawaii
Oahu, Hawaii

Contributing Source	Affected Media	Exposure Route	Terrestrial Receptors					
			Plants	Soil Invertebrates	Omnivorous Mammals	Omnivorous Birds	Shorebirds	Predatory Birds
AFFF use and storage at Camp Smith Fire Station #16	Surface Soil	Direct Contact:	Potentially Complete	Potentially Complete	Insignificant	Insignificant	Insignificant	Insignificant
		Incidental Ingestion:	N/A	Potentially Complete	Potentially Complete	Potentially Complete	Insignificant	Insignificant
		Food Web Transfer:	N/A	Potentially Complete	Potentially Complete	Potentially Complete	Insignificant	Insignificant
	Subsurface Soil	All Pathways:	Incomplete	Incomplete	Incomplete	Incomplete	Incomplete	Incomplete
	Surface Water (Freshwater and/or Groundwater Seeps)	Ingestion:	Incomplete	Incomplete	Incomplete	Incomplete	Incomplete	Incomplete

Rationale: Plants are exposed to surface soil through direct contact by roots. Soil invertebrates may be exposed to PFAS by absorption through the integument, ingestion of soil, and ingestion of plants and soil biota. Birds and mammals are potentially exposed to PFAS in surface soil through incidental ingestion of soil and ingestion of biota that have accumulated PFAS from surface soil.

Direct contact (other than ingestion) with soil by wildlife is considered insignificant. Dermal absorption of surface soil contaminants is a potentially complete pathway, but is not evaluated quantitatively for two reasons: 1) scientific data to estimate exposure of wildlife through dermal absorption are lacking, and 2) because of the outer layer of fur or feathers, exposure to chemicals via dermal absorption by wildlife is expected to be insignificant compared to exposure by ingestion pathways.

Because the site is too small to provide a significant foraging area for predatory birds or shorebirds, any potential exposure to these receptors would be insignificant.

Rationale: While burrowing animals may access deeper soils, exposure to subsurface soil is considered negligible compared to exposure to surface soil. There are no known burrowing birds (no identified seabird nesting colonies) or mammals at any of the three buildings. Plants may send roots into subsurface soil and some invertebrates burrow into deeper soil, but most nutrient uptake by plants and most foraging by invertebrates are assumed to occur within the upper bioactive layer of soil. Therefore, all exposure pathways are incomplete for subsurface soil.

Rationale: There are no surface water bodies on or near the site where ecological exposure would be expected. Surface migration of PFAS in soil at the site to surface water bodies is unlikely; historical releases were in the subsurface and even if soil excavation associated with the removal of the UST brought contamination to the surface, PFAS in surface soil would be expected to infiltrate into the subsurface and not reach any surface water bodies via surface runoff.

Because of the depth to groundwater (>500 feet) and the distance to locations where groundwater might discharge to surface water (over 1,000 feet northwest to Aiea Stream, over 2,000 feet southeast to North Halawa Stream), the potential for significant migration by this pathway is considered insignificant.

Contributing Source	Affected Media	Exposure Route	Aquatic Receptors				
			Aquatic Life (incl. Plankton)	Sediment Biota	Fish (all Trophic Levels)	Wildlife	
AFFF use and storage at Camp Smith Fire Station #16	Shoreline Surface Water and Sediment	Direct Contact/ Ingestion:	Insignificant	Insignificant	Insignificant	Insignificant	
		Food Web Transfer:	N/A	Insignificant	Insignificant	Insignificant	

Rationale: There are no aquatic habitats on or near the site where ecological exposure would be expected. Surface migration of PFAS in soil at the site to off-site surface water bodies is unlikely; historical releases were in the subsurface and even if soil excavation associated with the removal of the UST brought contamination to the surface, PFAS in surface soil would be expected to infiltrate into the subsurface and not reach any surface water bodies via surface runoff.

Because of the depth to groundwater (>500 feet) and the distance to locations where groundwater might discharge to surface water (over 1,000 feet northwest to Aiea Stream, over 2,000 feet southeast to North Halawa Stream, and nearly 2 miles to Pearl Harbor), the potential for significant migration by this pathway is considered insignificant.

If the results of the SI suggest a greater potential for migration via groundwater than currently expected, the potential impacts on ecological receptors in distant off-site aquatic habitats will be reevaluated.

N/A Not applicable: Exposure route does not exist, or is not normally evaluated as such in an ecological risk assessment.

Figure 3-12
Camp H. M. Smith Bldg. 612 Fire Station #16
Ecological Receptors Exposure Pathway Evaluation
Preliminary Assessment
Potential PFAS Sites
Marine Corps Base Hawaii
Oahu, Hawaii

Contributing Source	Affected Media	Exposure Route	Terrestrial Receptors					
			Plants	Soil Invertebrates	Omnivorous Mammals	Omnivorous Birds	Shorebirds	Predatory Birds
Bldg. 1617 Fire Training Area	Surface Soil	Direct Contact:	Potentially Complete	Insignificant	Insignificant	Insignificant	Insignificant	Insignificant
		Incidental Ingestion:	N/A	Potentially Complete	Potentially Complete	Potentially Complete	Potentially Complete	Potentially Complete
		Food Web Transfer:	N/A	Potentially Complete	Potentially Complete	Potentially Complete	Potentially Complete	Potentially Complete

Rationale: Plants are exposed to surface soil through direct contact by roots. Soil invertebrates may be exposed to COPC by absorption through the integument, ingestion of soil, and ingestion of plants and soil biota. Wildlife is potentially exposed to chemicals in surface soil through incidental ingestion of soil and ingestion of biota that have accumulated chemicals from surface soil.

Shorebirds are considered separately from omnivorous birds mainly because of the possible presence of the endangered Hawaiian stilt.

Direct contact with soil by wildlife is considered insignificant. Dermal absorption of surface soil contaminants is potentially complete for ecological receptors, but the pathway is not evaluated quantitatively for two reasons: 1) scientific data to estimate exposure of wildlife through dermal absorption are lacking, and 2) because of the outer layer of fur or feathers, exposure to COPCs via dermal absorption by wildlife is expected to be insignificant compared to exposure by ingestion pathways.

	Subsurface Soil	Direct Contact: Incidental Ingestion: Inhalation:	Incomplete	Incomplete	Incomplete	Incomplete	Incomplete	Incomplete

Rationale: While burrowing animals may access deeper soils, exposure to subsurface soil is considered negligible compared to that for surface soil. There are no known burrowing birds (no identified seabird nesting colonies) or mammals on site. Plants may send roots into subsurface soil and some invertebrates burrow into deeper soil, but most nutrient uptake by plants and most foraging by invertebrates are assumed to occur within the upper bioactive layer of soil. Therefore, all exposure pathways are incomplete for subsurface soil.

	Surface Water (Freshwater and/or Groundwater Seeps)	Ingestion:	Incomplete	Incomplete	Incomplete	Incomplete	Incomplete	Incomplete

Rationale: There are no fresh water or groundwater seeps on site. Exposure to shoreline surface water and sediment is addressed below.

Contributing Source	Affected Media	Exposure Route	Aquatic Receptors					
			Aquatic Life (incl. Plankton)	Sediment Biota	Fish (all Trophic Levels)	Shorebirds	Wading Birds	Predatory Birds
	Shoreline Surface Water	Direct Contact/ Ingestion:	Potentially Complete	Insignificant	Potentially Complete	Potentially Complete	Potentially Complete	Potentially Complete
		Food Web Transfer:	N/A	Potentially Complete	Potentially Complete	Potentially Complete	Potentially Complete	Potentially Complete

Rationale: Aquatic organisms are directly exposed to surface water at the shoreline or location where groundwater discharges. Waterbirds may ingest surface water as well as invertebrates (shorebirds) and fish (wading birds) that have taken-up COPC from surface water into their body tissues. Predatory birds (short-eared owl) could prey on birds with body burdens of site COPC. While sediment invertebrates are exposed to overlying water, the majority of their exposure is to sediment, which is addressed below.

	Shoreline Sediment	Direct Contact/ Ingestion:	Incomplete	Potentially Complete	Potentially Complete	Potentially Complete	Potentially Complete	Potentially Complete
		Food Web Transfer:	N/A	Potentially Complete	Potentially Complete	Potentially Complete	Potentially Complete	Potentially Complete

Rationale: Benthic organisms living in or on sediment, fish, and birds foraging in the harbor, may be exposed directly to or ingest COPCs in the shoreline sediment; therefore, this exposure pathway for these receptors is potentially complete. The ingestion of organisms that have accumulated COPC from sediment is also a potential exposure route. Aquatic life is defined as organisms that live in the water column and not on or in the sediment; the main exposure pathway for these organisms is from surface water, which is addressed above.

bldg. building
COPC chemical of potential concern
N/A Not applicable: Exposure route does not exist, or is not normally evaluated as such in ecological risk assessment.

Figure 3-13
Bldg. 1617 Fire Fighting Training Area
Ecological Receptors Exposure Pathway Evaluation
Preliminary Assessment
Potential PFAS Sites
Marine Corps Base Hawaii
Oahu, Hawaii

Contributing Source	Affected Media	Exposure Route	Terrestrial Receptors: Plants	Soil Invertebrates	Omnivorous Mammals	Omnivorous Birds	Shorebirds	Predatory Birds
Bldg. 4074, 5068, and 6822 AFFF storage	Surface Soil	Direct Contact:	Potentially Complete	Potentially Complete	Insignificant	Insignificant	Insignificant	Insignificant
		Incidental Ingestion:	N/A	Potentially Complete	Potentially Complete	Potentially Complete	Potentially Complete	Potentially Complete
		Food Web Transfer:	N/A	Potentially Complete	Potentially Complete	Potentially Complete	Potentially Complete	Potentially Complete

Rationale: Plants are exposed to surface soil through direct contact by roots. Soil invertebrates may be exposed to COPCs by absorption through the integument, ingestion of soil, and ingestion of plants and soil biota. Birds and mammals are potentially exposed to chemicals in surface soil through incidental ingestion of soil and ingestion of biota that have accumulated chemicals from surface soil.

Shorebirds are considered separately from omnivorous birds mainly because of the possible presence of the endangered Hawaiian stilt.

Direct contact with soil by wildlife is considered insignificant. Dermal absorption of surface soil contaminants is a potentially complete pathway, but is not evaluated quantitatively for two reasons: 1) scientific data to estimate exposure of wildlife through dermal absorption are lacking, and 2) because of the outer layer of fur or feathers, exposure to COPCs via dermal absorption by wildlife is expected to be insignificant compared to exposure by ingestion pathways.

	Subsurface Soil	Direct Contact: Incidental Ingestion: Inhalation:	Incomplete	Incomplete	Incomplete	Incomplete	Incomplete	Incomplete

Rationale: While burrowing animals may access deeper soils, exposure to subsurface soil is considered negligible compared to exposure to surface soil. There are no known burrowing birds (no identified seabird nesting colonies) or mammals at any of the three buildings. Plants may send roots into subsurface soil and some invertebrates burrow into deeper soil, but most nutrient uptake by plants and most foraging by invertebrates are assumed to occur within the upper bioactive layer of soil. Therefore, all exposure pathways are incomplete for subsurface soil.

	Surface Water (Freshwater and/or Groundwater Seeps)	Ingestion:	Incomplete	Incomplete	Incomplete	Incomplete	Incomplete	Incomplete

Rationale: There are no fresh water or groundwater seeps on site. Exposure to shoreline surface water and sediment is addressed below.

Contributing Source	Affected Media	Exposure Route	Aquatic Receptors: Aquatic Life (incl. Plankton)	Sediment Biota	Fish (all Trophic Levels)	Shorebirds/ Waterbirds	Predatory Birds
	Shoreline Surface Water	Direct Contact/ Ingestion:	Potentially Complete	Insignificant	Potentially Complete	Potentially Complete	Incomplete
		Food Web Transfer:	N/A	Potentially Complete	Potentially Complete	Potentially Complete	Insignificant

Rationale: Aquatic organisms are directly exposed to surface water at the shoreline or locations where groundwater discharge or surface runoff may contaminate surface water. Shorebirds/waterbirds may ingest surface water as well as invertebrates and fish that have taken up COPCs from surface water into their body tissues. Predatory birds (short-eared owl) are not expected to drink ocean water and any predation of birds with body burdens of site COPCs is expected to be an insignificant part of the diet. While sediment invertebrates are exposed to overlying water, the majority of their exposure is to sediment, which is addressed below.

Shoreline Sediment	Direct Contact/ Ingestion:	Incomplete	Potentially Complete	Potentially Complete	Potentially Complete	Incomplete
	Food Web Transfer:	N/A	Potentially Complete	Potentially Complete	Potentially Complete	Insignificant

Rationale: Benthic organisms living in or on sediment, fish, and shorebirds/waterbirds (but not predatory birds, for the same reasons noted above for surface water) foraging along the shoreline may be exposed directly to or ingest COPCs in the shoreline sediment; therefore, this exposure pathway for these receptors is potentially complete. The ingestion of organisms that have accumulated COPC from sediment is also a potential exposure route. Aquatic life is defined as organisms that live in the water column and not on or in the sediment; the main exposure pathway for these organisms is from surface water, which is addressed above.

AFFF aqueous film-forming foam
Bldg. building
COPC chemical of potential concern
N/A Not applicable: Exposure route does not exist, or is not normally evaluated as such in an ecological risk assessment.

Figure 3-14
Bldg. 4074 Fire Station No. 8, Bldg. 5068 Crash Crew Storage, and Bldg. 6822 Crash Crew Headquarters
Ecological Receptors Exposure Pathway Evaluation
Preliminary Assessment
Potential PFAS Sites
Marine Corps Base Hawaii
Oahu, Hawaii

Contributing Source	Affected Media	Exposure Route	Terrestrial Receptors					
			Plants	Soil Invertebrates	Omnivorous Mammals	Omnivorous Birds	Shorebirds	Predatory Birds
Runway Runoff	Surface Soil	Direct Contact:	Potentially Complete	Insignificant	Insignificant	Insignificant	Insignificant	Insignificant
		Incidental Ingestion:	N/A	Potentially Complete	Potentially Complete	Potentially Complete	Potentially Complete	Potentially Complete
		Food Web Transfer:	N/A	Potentially Complete	Potentially Complete	Potentially Complete	Potentially Complete	Potentially Complete

Rationale: Plants are exposed to surface soil through direct contact by roots. Soil invertebrates may be exposed to COPCs by absorption through the integument, ingestion of soil, and ingestion of plants and soil biota. Birds and mammals are potentially exposed to chemicals in surface soil through incidental ingestion of soil and ingestion of biota that have accumulated chemicals from surface soil.

Shorebirds are considered separately from omnivorous birds mainly because of the possible presence of the endangered Hawaiian stilt.

Direct contact with soil by wildlife is considered insignificant. Dermal absorption of surface soil contaminants is potentially complete for ecological receptors, but the pathway is not evaluated quantitatively for two reasons: 1) scientific data to estimate exposure of wildlife through dermal absorption are lacking, and 2) because of the outer layer of fur or feathers, exposure to COPCs via dermal absorption by wildlife is expected to be insignificant compared to exposure by ingestion pathways.

	Subsurface Soil	Direct Contact: Incidental Ingestion: Inhalation:	Incomplete	Incomplete	Incomplete	Incomplete	Incomplete	Incomplete

Rationale: While burrowing animals may access deeper soils, exposure to subsurface soil is considered negligible compared to that for surface soil. There are no known burrowing birds (no identified seabird nesting colonies) or mammals on site. Plants may send roots into subsurface soil and some invertebrates burrow into deeper soil, but most nutrient uptake by plants and most foraging by invertebrates are assumed to occur within the upper bioactive layer of soil. Therefore, all exposure pathways are incomplete for subsurface soil.

	Surface Water (Freshwater and/or Groundwater Seeps)	Ingestion:	Incomplete	Incomplete	Incomplete	Incomplete	Incomplete	Incomplete

Rationale: There are no fresh water or groundwater seeps on site. Exposure to shoreline surface water and sediment is addressed below.

Contributing Source	Affected Media	Exposure Route	Aquatic Receptors				
			Aquatic Life (incl. Plankton)	Sediment Biota	Fish (all Trophic Levels)	Shorebirds/ Waterbirds	Predatory Birds
Runway Runoff	Shoreline Surface Water	Direct Contact/ Ingestion:	Potentially Complete	Insignificant	Potentially Complete	Potentially Complete	Incomplete
		Food Web Transfer:	N/A	Potentially Complete	Potentially Complete	Potentially Complete	Potentially Complete

Rationale: Aquatic organisms are directly exposed to surface water at the shoreline or locations where groundwater discharge or surface runoff may contaminate surface water. Shorebirds/waterbirds may ingest surface water as well as invertebrates and fish that have taken up COPCs from surface water into their body tissues. Predatory birds (short-eared owl) are not expected to drink ocean water but could prey on birds with body burdens of site COPCs. While sediment invertebrates are exposed to overlying water, the majority of their exposure is to sediment, which is addressed below.

	Shoreline Sediment	Direct Contact/ Ingestion:	Incomplete	Potentially Complete	Potentially Complete	Potentially Complete	Incomplete
		Food Web Transfer:	N/A	Potentially Complete	Potentially Complete	Potentially Complete	Potentially Complete

Rationale: Benthic organisms living in or on sediment, fish, and shorebirds/waterbirds (but not predatory birds) foraging along the shoreline, may be exposed directly to or ingest COPCs in the shoreline sediment; therefore, this exposure pathway for these receptors is potentially complete. The ingestion of organisms that have accumulated COPCs from sediment is also a potential exposure route. Aquatic life is defined as organisms that live in the water column and not on or in the sediment; the main exposure pathway for these organisms is from surface water, which is addressed above.

COPC chemical of potential concern
N/A Not applicable: Exposure route does not exist, or is not normally evaluated as such in an ecological risk assessment.

Figure 3-15
MCBH Runways
Ecological Receptors Exposure Pathway Evaluation
Preliminary Assessment
Potential PFAS Sites
Marine Corps Base Hawaii
Oahu, Hawaii

4. Summary and Recommendations

The PA identified sites potentially impacted by PFAS and grouped them, identifying the sites as Group A through D. A total of two sites were identified as Group A sites and five sites were identified as Group B sites at MCBH and Camp H. M. Smith. No Group C and two Group D sites were identified at MCBH and Manana Housing. Details of the grouped sites identified are found in Table 4-1.

Table 4-1: Summary of Categorized Sites

Installation	Building No./ Location	Description	Approach	AFFF?	Findings	Assigned Group
Camp H. M. Smith	612	Fire Station #16	Phone Interview	Y	AFFF located on 2 trucks and 30 gallons temporarily of AFFF for backup; AFFF storage locker located within the fire station, and no known releases.	B
Manana Housing	68	Fire Station #5	Phone Interview	Y	AFFF located on two trucks; no off-truck storage, no known releases, and no unpaved surfaces.	D
MCBH Kaneohe Bay	1617	Fire Fighting Training Area	Document Review, Building Survey, Visual Inspection	Y	Used AFFF, per 1990 FFTA SI Report.	A
	4074	Fire Station #8	Building Survey, Interview, Visual Inspection	Y	Station has three trucks with 70 gallons of AFFF each, portable hose-drying rack located in grassy area, and 5-gallon containers of AFFF stored at the fire station. Potential AFFF release during hose-drying.	B
	5068	Crash Crew Storage	Building Survey, Visual Inspection	Y	AFFF stored is various years and manufacturers, early as 1988.	B
	5069	CCH	Building Survey, Interview, Visual Inspection	Y	AFFF has gone off in last year.	A
	6082	Storage/ outdoor pallet of AFFF	Building Survey, Visual Inspection	Y	Storage of AFFF with no known/documented AFFF releases.	D
	6822	Crash Crew Headquarters	Building Survey, Visual Inspection	Y	Has AFFF stored at building.	B
	N/A	Runways	Building Survey, Visual Inspection	Y	AFFF used in crash response, no current records of crashes from 2010 to present.	B
MCTAB	LZ Gull	MV-22 hard landing mishap site	Document Review	Y	AFFF was applied during the fire response to the hard landing mishap.	A [a]

CCH corrosion control hangar
N/A not applicable
[a] LZ Gull was identified and is being evaluated as part of a separate project.

4.1 RECOMMENDATIONS

Based on the data collected and presented in this PA, further evaluation is recommended for the Group A and B sites. Based on the potentially complete exposure pathways determined in the CSM, a SI with confirmation sampling is recommended to confirm whether PFAS is present in soil and/or groundwater at the six sites. Work plans for evaluating the Group A and B sites under a SI are currently in-progress.

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Appendix A:
Building Screening Tables

Camp Smith Facilities List

Bldg No.	Year Built	Structure
20E	1990	IPAC TRAINING CENTER
20A	1977	EMERG GEN BLDG
20C	1985	UPS BLDG
49	1957	SWIMMING POOL LANAI
50	ca. 2000	MAIN GATE SENTRY FACILITY
52	ca. 1990	ECHO GATE SENTRY BOOTH
56	1966	SMALL GUN SHOP
58	1962	PERSONNEL PICK UP STATION
62	1957	WINDBREAK SWIMMING POOL
65	1956	BORDELON FIELD
67	1960	REVIEWING PAD
69	1961	CARPORT
70	1961	CARPORT
76	1961	FLAG POLE
80	1967	CINCPAC OPCON CTR
81	1967	TELEPHONE EXCHANGE/ADMIN BLDG
82	1971	NO BREAK/EMER GEN BLDG
305	1945	MISC WEATHER SHELTER
367	1977	STABLES
401	1969	EM BARRACKS W/O MESS
402	1969	EM BARRACKS W/O MESS
403	1969	EM BARRACKS W/O MESS
404	1969	EM BARRACKS W/O MESS
437	1985	HELICOPTER LANDING PAD
450	1977	HANDBALL COURTS
451	1985	RECQUETBALL COURTS
452	1985	AUTO HOBBY SHOP
453	1985	PUBLIC TOILETS
500	1969	STAFF NCO CLUB
501	1986	ENLISTED CLUB
600	1983	MAINTNANCE/MOTORTRAN SPORTFAC
601	1987	POLICE STATION (PMO)
601A	1987	FMFPAC ARMORY
220132	1957	ROADS
220133	1959	PARKING AREAS AT CAMP SMITH
220134	1957	SIDEWALKS
220135	1969	SIDEWALKS FOR NEW BARRACKS
220139	1969	STORM SEWER/NEW BARRACKS
220140	1969	DRAINAGE DITCH/NEW BRKS
220141	1949	WALL
220142	1959	FENCE
220143	1957	SWIMMING POOL FENCE
220144	1953	FENCE
220145	1959	FENCE/TENNIS COURT
220146	1962	FENCE
220287	1959	PARKING AREAS AT PC ANNEX

Manana Facilities List

Bldg No.	Year Built	Structure
66	1960	FOOTBALL/SOFTBALL FIELD
825	1960	SKATEBOARD PARK
826	1960	BASKETBALL COURT
827	1960	TENNIS COURT
828	1960	TENNIS COURT
829	1960	PLAYGROUND
840	1970	SWIMMING POOL
840W	1970	WADING POOL
842	1970	POOL EQUIP ROOM
850	1971	7-DAY STORE
220279	1972	PARKING AREA 7-DAY STORE
220289	1972	PARKING AREA - SWIM POOL
220290	1959	ROADS-MANANA
818	1959	EMERGENCY SHELTER

MCBH Facility Index for Base Map

Building #	Location	Grid	Description
1	N/A	G18	SEAPLANE RAMP
2	N/A	G19	SEAPLANE RAMP
3	N/A	H19	SEAPLANE RAMP
4	N/A	H20	SEAPLANE RAMP
5	N/A	H20	SEAPLANE RAMP
14	N/A	L20	POWER CHECK PAD
15	Access Road	L20	AIRCRAFT REVETMENT
17	N/A	L20	POWER CHECK PAD
30	First Street	H17	FLAMMABLES STOREHOUSE
98	Access Road	H16	CAR WASH
100A	Fourth Street	J16	SALUTE BATTERY GUN MOUNT
100B	Forth Street	J16	SALUTE BATTERY GUN MOUNT
101	First Street	H18	MAINTENANCE HANGAR
102	First Street	H19	MAINTENANCE HANGAR
103	First Street	H19	MALS-24 HQ HANGER
104	First Street	H19	MAINTENANCE HANGAR
105	First Street	J20	HANGAR 5
106	D Street	G17	GROUNDS MAINTENANCE STORAGE
116	Harris Avenue	G11	COMMUNICATIONS SHOP RADIO
120	D Street	G17	SELF HELP STORAGE
125	N/A	H17	HEATING FUEL STORAGE/NAVY SPEC
130	Second Street	H16	CSSG-3 CARPENTER SHOP
131	D Street	G17	CANOPY
132	N/A	G17	RECYCLE
138	First Street	J21	SWITCHING STATION
139	E Street	H16	OFFICE/STORAGE
140	Access Road	G16	OFFICE/WAREHOUSE, MCCS
144	First Street	H19	SATELLITE MESS FACILITY
146	Access Road	G16	COMMUNICATION CENTER
153	N/A	J21	STORAGE FACILITY
155	N/A	J20	PUMP HOUSE SEWAGE
159	First Street	H19	HANGAR SHOP SPACES
160	First Street	H19	AIRCRAFT SPARES STORAGE
161	First Street	H19	INERT STOREHOUSE
162	First Street	H19	GENEAL/FLIGHT EQUIP STORAGE
163	First Street	H19	HAZARDOUS MATERIAL STORAGE
166	First Street	H18	ORDNANCE MAGAZINE
167	First Street	H18	ORDNANCE OPS BUILDING
168	First Street	H18	AIRCRAFT SPARES STORAGE
170	First Street	H18	AIRCRAFT SPARES STORAGE
175	Access Road	G17	MAINTENANCE WORKSHOP
183	First Street	J19	ORDNANCE MAGAZINE
184	First Street	J19	ORDNANCE MAGAZINE
187	First Street	H18	INSTRUMENT CALIBRATION SHOP
188	First Street	H18	ORDNANCE MAGAZINE
189	First Street	H18	ORDNANCE MAGAZINE
190	First Street	H18	AIRCRAFT SPARES STORAGE
191	First Street	H18	FLAMMABLES STORAGE
192	First Street	H18	ORDNANCE MAGAZINE
193	First Street	H18	ORDNANCE MAGAZINE
194	First Street	H18	HAZ MAT STORAGE
195	First Street	H18	FLAMMABLES STORAGE
196	First Street	H18	FLAMMABLES STORAGE
201	D Street	H17	FAC DEPT SHOP/ELEC/REF/PLUMB
202	First Street	H17	FAC DEPT SHOP/METAL
203	First Street	H17	FAC DEPT SHOP/GRNDS/JAN/PEST
204	Second Street	H16	FAC DEPT SHOP_CARPENTRY/PAINT
206	Second Street	H16	MULTICRAFT SHOP
208	Second Street	H17	DPI/SERV MART/ISSO/RJE/STORAGE
209	C Street	H17	GENERAL WAREHOUSE/ADMIN
211	N/A	H16	SGT'S COURSE SUPPLY
212	Third Street	H16	FURNITURE WAREHOUSE
213	E Street	H16	TEL EXCH/STORAGE
214	D Street	H17	FLAMMABLES STORAGE
215	E Street	H16	LETAL SERVICE CENTER/HQTRS CO
216	Fourth Street	J16	HEADQUARTERS / MARINE & FAMILY SERVICES
217	Fourth Street	J16	CREDIT UNION/SCIF
218	E Street	J16	RDY RESERVE LIASION OFF/COMP O
219	Fifth Street	J16	MCCS ADMIN/SEMPER FIT/THEATER/LIBRARY
220	Fourth Street	J15	JT ED/RED CROSS CIVIL AIR PATR
221	Fourth Street	H15	STORAGE
222	Fourth Street	H15	MOTOR TRANSPORT SCHOOL
222e	N/A	H15	TRANSFORMER
223	Fourth Street	H15	DIVISION SCHOOLS
224	Fourth Street	H15	BEQ/NCO SCHOOL
225	Fourth Street	H15	BEQ
226	Fourth Street	H15	BEQ
227	Fourth Street	H15	BEQ
227_xf	Fourth Street	H15	TRANSFORMER - NEAR 227
228	Fourth Street	H15	BEQ
229	Fourth Street	H15	BEQ
230	Fourth Street	H15	BEQ
238	E Street	H17	FAC DEPT SHOPS STORAGE
240	E Street	H17	FAC DEPT SHOPS STORAGE

MCBH Facility Index for Base Map

Building #	Location	Grid	Description
241	E Street	H16	PW SHOP/SIGN SHOP STORAGE
242	D Street	H17	FAC DEPT SHOP/OFFICE
243	Third Street	H16	TRAIN'G SET FIRE OBSERVATION
244	Fifth Street	J15	EXCH SERV OUTLETS/CDC/FOOD & H
245	Mokapu Road	J15	FURNITURE STORE
250	C Street	J16	GENERAL WAREHOUSE
252	Fifth Street	H15	COMBAT TRAINING POOL
264	D Street	H17	SWITCHING STATION
265	F Street	H15	TRANSFORMER STATION
266	C Street	J17	TRANSFORMER STATION
267	Access Road	J17	COMBAT CAMERA
268	Third Street	J16	SISMO OFFICE/MAINTENANCE/STORA
269	Mokapu Road	K16	GENERAL WAREHOUSE, PACK/SHOP
270	D Street	J16	GENERAL WAREHOUSE
271	Fifth Street	J16	GENERAL WAREHOUSE
272	Second Street	H16	HUMAN RESOURCES OFFICE
274	Fifth Street	H15	ENLISTED SWIMMING POOL/OFFICE
276	Third Street	H16	TRANSFORMER STATION
277	Fourth Street	J16	TRANSFORMER - BY FLAG POLE
278	Fourth Street	J16	TRANSFORMER STATION
279	Second Street	H16	BASE SAFETY
280	Second Street	H17	GENERAL WAREHOUSE
283	E Street	H16	BUS STOP SHELTER
284	Access Road	H16	TRANSFORMER STATION
287	E Street	H16	SAWDUST BIN
298	C Street	H17	TRANSFORMER
300	C Street	H17	MCBH WRECKER SECTION
301	First Street	H18	MAG HQ
302	N/A	J18	PUMP HOUSE SEWAGE SANITARY
313	B Street	K18	GRENERAL WAREHOUSE/BULK
320	First Street	H18	MAINTENANCE STORAGE
322	C Street	H18	GREASE RACK
330	Third Street	J18	RESTROOM
333	B Street	K18	COMMUNICATIONS/ELECTRONICS MAI
336	Third Street	J18	TRANSFORMER
338	First Street	H18	TRANSFORMER
344	N/A	N14	TRANSFORMER STATION
347	Sixth Street	K17	FUELS OPS FAC
348	Second Street	H17	FAMMABLES STORAGE
349	Third Street	J18	GENERAL WAREHOUSE
351	C Street	H17	AUTO VEHICLE SHOP
352	C Street	H17	ADMIN OFFICE - TRANSPORTATION POOL
367	C Street	J17	MWR EXC INSTALL WAREHOUSE
370	Third Street	J18	PETROLEUM OIL LUB OPS FAC
373	B Street	K18	ORG MNT SUP/HSG WAREHOUSE
374	Sixth Street	K17	MARINE BAND FACILITY
375	Third Street	J18	MAINTENANCE HANGAR
377	Third Street	J18	AUTO VEHICLE SHOP
385	C Street	H17	GENERAL WAREHOUSE/AUTOPARTS
386	Crescent Road	K17	BEQ SENIOR NCO
388	B Street	K18	GENERAL WAREHOUSE
390	Third Street	J18	TRANSFORMER STATION
399	C Street	J18	AUTO VEHICLE SHOP
455	Pancoast Place	K13	COMMUNITY FAC/VET
456	Bingham Way	K13	SEWAGE PUMPING STATION
459	Bingham Way	K13	TRANSFORMER STATION
460	Pancoast Place	K13	GENERAL WAREHOUSE
472	Access Road	L12	RESTROOM
473	Service Road	M06	READY MAGAZINE
475	Mokapu Road	J16	FLAMMABLE STORAGE
476	Second Street	H16	FLAMMABLE STORAGE
488	Mokapu Road	J14	BASEBALL DIAMOND
489	Mokapu Road	J14	SOFTBALL DIAMOND
492	Mokapu Road	J15	COURT TENNIS
497	Moffett Road	L14	COURT TENNIS
502	Reeves Road	L14	OFFICER'S CLUB
503	Nimitz Road	M14	BOQ
504	Puuhawaiiloa Road	K15	TACAN VHF/UHF TRANS
505	Castaneda Street	J15	STATION COMMUNICATION BLDG
512C	Reeves Road	M14	HOUSING - CARPORT
513C	Nimitz Road	M14	HOUSING - CARPORT
514C	Nimitz Road	M14	HOUSING - CARPORT
516C	Nimitz Road	M14	HOUSING - CARPORT
517C	Nimitz Road	M14	HOUSING - CARPORT
518C	Nimitz Road	M14	HOUSING - CARPORT
519C	Nimitz Road	M14	HOUSING - CARPORT
520C	Halligan Road	M14	HOUSING - CARPORT
521C	Halligan Road	M14	HOUSING - CARPORT
522C	Halligan Road	M14	HOUSING - CARPORT
523C	Reeves Road	M15	HOUSING - CARPORT
524C	Reeves Road	M15	HOUSING - CARPORT
525C	Reeves Road	M15	HOUSING - CARPORT
526C	Reeves Road	M15	HOUSING - CARPORT
527C	Yarnell Road	M15	HOUSING - CARPORT

MCBH Facility Index for Base Map

Building #	Location	Grid	Description
528C	Yarnell Road	M15	HOUSING - CARPORT
530C	Yarnell Road	M15	HOUSING - CARPORT
531C	Yarnell Road	M15	HOUSING - CARPORT
532C	Yarnell Road	M15	HOUSING - CARPORT
533C	Yarnell Road	N15	HOUSING - CARPORT
534C	Yarnell Road	M15	HOUSING - CARPORT
535	Halligan Road	M15	UNDERGROUND STORAGE
537	Reeves Road	L14	SWIMMING POOL OFFICERS
538	Nimitz Road	M14	UNDERGROUND STORAGE
540	N/A	J16	UNDERGROUND STORAGE
545	Mokapu Road	J16	SCOUTS STORAGE
546	Mokapu Road	K16	UNDERGROUND STORAGE
547	Reed Road	L16	MAG - STORAGE BUNKER
548	Reed Road	L15	STORAGE
549	Access Road	K15	POTABLE STORAGE TANK/GND LEVEL
550	Access Road	K15	POTABLE STORAGE TANK/ GRND LEV
560	N/A	G5	MARCORPS ORG STORAGE
562	N/A	G5	MARCORPS ORG STORAGE
564	N/A	G5	MARCORPS ORG STORAGE
566	Padilla Drive	J15	SUPPLY WAREHOUSE/ ROICC
569	N/A	I6	MARCORPS ORG STORAGE
570	Reeves Road	L14	SWITCHING STATION ELECTRIC
571	Mokapu Road	J16	UNDERGROUND STORAGE
572	Mokapu Road	K16	UNDERGROUND STORAGE
573	Mokapu Road	K16	UNDERGROUND STORAGE
574 BLD	Mokapu Road	L17	TRANSOFRMER BUILDING
579	Reed Road	L15	COMMUNITY CENTER
584	N/A	L16	NAVY STORAGE BLDG
586	Yarnell Road	M15	TRANSFORMER STATION
587	Halligan Road	M14	TRANSFORMER STATION
588	Reeves Road	M15	XFMR ENCLOSURE
589	N/A	M14	TRANSFORMER STATION
590	Puuhawaiiloa Road	K15	TRANSFORMER STATION
600	Nimitz Road	N14	STEWARDS QUARTERS, ENLISTED
601	Access Road	L20	PROVOST MARSHALL OFFICE
602	N/A	L20	GENERAL WAREHOUSE
603	Access Road	L20	ORDNANCE STORAGE
605	Palikilo Road	M19	INERT STORAGE
610	Perimeter Road	K22	INERT STORAGE
612	N/A	L20	TEST CELL FACILITY STORAGE
614	Moffett Road	N14	ENVIRONMENTAL LAB-NOSC
615	B Street	L17	CRASHCREW STG MISC
620	Sumner Road	L20	AIRCRAFT RECOVERY OPS
622	Access Road	K15	PUMPHOUSE POTABLE
678	First Street	H17	TRANSFORMER STATION
688	Perimeter Road	K22	TANSFORMER STATION
697	Reeves Road	M15	BOILER PLANT
698	Reeves Road	M15	TEMP LODG'G STOR/LAUNDRY FAC
700	N/A	P17	SMALL ARMS MAGAZINE
701	Palikilo Road	P18	INERT STORAGE
702	Palikilo Road	O18	INERT STORAGE
703	Palikilo Road	O18	INERT STORAGE
704	Palikilo Road	N18	INERT STORAGE
705	Palikilo Road	N19	INERT STORAGE
706	Palikilo Road	N19	READY MAGAZINE
707	Mokapu Road	N18	MAG - STORAGE MAGAZINE
708	Sumner Road	M18	PMO MAGAZINE
709	Sumner Road	M18	INERT STORAGE
710	Sumner Road	M18	INERT STORAGE
711	Sumner Road	M18	PERSONAL SUPPORT STORAGE
712	Sumner Road	M19	PERSONAL SUPPORT STORAGE
715	N/A	N18	INERT STORAGE
735	Access Road	N18	GEN WAREHOUSE
736	Access Road	N18	MAG ORDANCE INERT STOREHOUSE
792	Access Road	F08	GAS CHAMBER TRAINING FAC
794	Access Road	K15	POTABLE WATER DISTRIBUTION FAC
820	Mokapu Road	J13	SUBSTATION
886	Mokapu Road	C10	GUARD HOUSE
891	Access Road	C11	SEPTIC TANK
892	N/A	G16	WATER RECLAMATION FACILITY
893	Access Road	G16	WATER RECLAMATION FACILITY
894	Access Road	G16	WATER RECLAMATION FACILITY
895	Access Road	G16	WATER RECLAMATION FACILITY
896	Access Road	G16	WATER RECLAMATION FACILITY
897	N/A	G16	WATER RECLAMATION FACILITY
898	Access Road	G16	WATER RECLAMATION FACILITY
899	Access Road	G16	WATER RECLAMATION FACILITY
902	Access Road	G16	WATER RECLAMATION FACILITY
977	Access Road	G16	WATER RECLAMATION FACILITY
978	Access Road	G16	WATER RECLAMATION FACILITY
980	Fourth Street	H15	FILTER PLANT/ENLISTED POOL
981	Fourth Street	H15	ENL SWIM POOL DRESSING ROOM
982	Reeves Road	L14	FILTER PLANT, OFFICER'S POOL
995	Palikilo Road	M19	FLAMMABLE STORAGE

MCBH Facility Index for Base Map

Building #	Location	Grid	Description
996	N/A	H15	WALKWAY COVERED
997	N/A	H15	WALKWAY COVERED
998	N/A	H15	WALKWAY COVERED
999	N/A	H15	WALKWAY COVERED
1000	N/A	H15	WALKWAY COVERED
1001	N/A	H15	WALKWAY COVERED
1002	N/A	H15	WALKWAY COVERED
1003	N/A	H15	WALKWAY COVERED
1004	N/A	H15	WALKWAY COVERED
1005	N/A	H15	WALKWAY COVERED
1006	N/A	H15	WALKWAY COVERED
1016	Mokapu Road	J14	SHELTER BASEBALL DUGOUT
1017	Mokapu Road	J14	SHELTER BASEBALL DUGOUT
1027	Craig Avenue	H12	BATTALION OPERATIONS HQS
1033	Seldon Street	G12	3 MAR REG/BN CP/MIN GYM
1034	Seldon Street	G12	BEQ/TRAINING BARRACKS/STORAGE
1043	Seldon Street	G13	INSTLN PN ADMIN CTR
1044	Seldon Street	G13	CSSG AID STA/DEERS CAC ID
1045	Craig Avenue	H12	ELEC/COMM MAINT SHOP
1057	Seldon Street	G11	CO/BATTERY HQ
1058	Seldon Street	G11	MED CLINIC
1064	Harris Avenue	H11	COMM/ELEC SHOP
1069	Seldon Street	G12	3RD MAR REG HQ
1074	Seldon Street	G13	CO/BATTERY HQ
1080	Seldon Street	G11	3RD MAR MED CLINIC
1086	Seldon Street	G13	CLB-3 HQ
1087	Mokapu Road	H11	HEADQUARTERS, BATTALION
1088	Mokapu Road	H12	HEADQUARTERS, REGIMENTAL
1089	Seldon Street	H13	MESS HALL-GALLERY 2 REG
1090	Seldon Street	G11	MCX ANNEX/YOUTH CENTER
1092	Craig Avenue	G13	WAREHOUSE GENERAL
1094	Third Street	G16	BEQ (VACANT)
1095	Third Street	G15	MILITARY POLICE STATION
1096	Third Street	G15	MILITARY POLICE STATION
1104	N/A	G12	TRANSFORMER STATION
1107	Third Street	G13	TRANSFORMER STATION
1108	N/A	G13	TRANSFORMER STATION
1109	N/A	G13	TRANSFORMER STATION
1111	N/A	J12	TRANSFORMER STATION
1112	N/A	H12	TRANSFORMER STATION
1117	N/A	G11	TRANSFORMER STATION
1118	N/A	G11	TRANSFORMER STATION
1119	N/A	G11	TRANSFORMER STATION
1120	N/A	H11	TRANSFORMER STATION
1121	N/A	H11	TRANSFORMER STATION
1122	Seldon Street	G13	TRANSFORMER STATION
1124	N/A	H11	TRANSFORMER STATION
1125	Seldon Street	G12	SWITCHING STATION ELECTRIC
1125xf	Craig Avenue	G12	TRANSFORMER AT 1125
1126	N/A	G15	TRANSFORMER STATION
1128	N/A	G11	TRANSFORMER STATION
1129	Manning Street	L13	TRANSFORMER STATION
1140	N/A	G12	COVERED WALKWAY
1141	N/A	G12	COVERED WALKWAY
1153	N/A	G12	COVERED WALKWAY
1165	N/A	G11	COVERED WALKWAY
1167	Mokapu Road	H10	BUS STOP SHELTER
1168	B Street	L18	AIRCRAFT FIRE & RESCUE STA
1169	Third Street	J18	PARACHUTE/SURVIVAL EQUIP SHOP
1170	Taxiway C	K19	ACFT DIR FUEL ISLAND
1171	Taxiway C	K19	ACFT DIR FUEL ISLAND
1175	Third Street	J18	SUBSTATION
1177	Perimeter Road	J21	TRANSFORMER
1178	Third Street	J18	ENGINE TEST CELL
1180	Mokapu Road	O18	ORDNANCE OPS BLDG
1181	Sumner Road	L22	4TH RECON HQ
1182	Sumner Road	L22	TRANSFORMER - STANDBY GEN PLANT
1187	Third Street	J18	STORAGE TANKS, GROUND LEVEL
1188	Mokapu Road	C10	SENTRY GATE HOUSE
1192	D Street	G18	LST LANDING RAMP
1193	Mokapu Road	J13	MOKAPU ELEMENTARY SCHOOL
1193-P1	Lawrence Road	J13	SCHOOL
1193-P10	Llanes Court	J12	SCHOOL
1193-P2	Lawrence Road	J13	SCHOOL
1193-P3	Lawrence Road	J13	SCHOOL
1193-P5	Mokapu Court	J13	SCHOOL
1193-P6	Mokapu Road	J12	SCHOOL
1193-P7	Llanes Court	J12	SCHOOL
1193-P9	Llanes Court	J12	SCHOOL
1193-PT	Mokapu Court	J13	SCHOOL
1194	Mokapu Court	J13	SEWAGE PUMPING STATION
1196	Access Road	J15	BANK OF HAWAII
1197	Mokapu Road	L16	FAMILY HOUSING STORAGE
1199	Third Street	G13	RESTROOM

MCBH Facility Index for Base Map

Building #	Location	Grid	Description
1215	N/A	M15	TRANSFORMER STATION
1216	N/A	N17	ACFT ARRESTING GEAR
1217	N/A	K21	ACFT ARRESTING GEAR
1226	Lawrence Road	J13	WAIKULU
1227	Sixth Street	K17	GREASE RACK
1228	Third Street	J18	PAINT BOOTH
1230	Seldon Street	G12	BUS STOP SHELTER
1231	Palikilo Road	O19	INERT STORAGE
1236	C Street	H17	DISPATCH OFFICE
1249	N/A	K13	TRANSFORMER STATION
1252	Sixth Street	K17	AIRCRAFT READY FUEL STOR
1253	Sixth Street	K17	AIRCRAFT READY FUEL STOR
1254	Third Street	K17	TRUCK LOADING FACILITY
1255	Fifth Street	J15	EXCHANGE CAFETERIA
1258	Mokapu Road	J14	RESTROOM
1259	G Street	H14	ATHLETIC FIELD
1262	N/A	H13	BASKETBALL/VOLLEYBALL COURT
1267	Third Street	H16	AUTO SHOP, PAINT BOOTH
1269	Reeves Road	L14	BAR-B-Q GRILL O'CLUB
1270	Sumner Road	L22	RELIGIOUS RETREAT FAC
1273	N/A	N17	AIRCRAFT ARRESTING GEAR
1274	Mokapu Road	N18	TRANSFORMER STATION
1275	N/A	O17	TOILET
1278	First Street	J19	GENERAL WAREHOUSE
1279	First Street	J19	GENERAL WAREHOUSE
1283	Harris Avenue	F11	TRANSFORMER STATION
1284	Harris Avenue	F11	AMPHIBIAN MAINTENANCE SHOP
1285	Harris Avenue	F11	3RD MAR STORAGE
1287	Field Maintenance Roadway	G11	LOAD/UNLOAD RAMP
1288	Field Maintenance Roadway	F11	GREASE RACK
1289	N/A	F11	AMPH TRK GREASE RACK
1293	Mokapu Road	C11	SUBSTATION HAWAIIAN ELEC CO
1294	Magazine Road	L05	TARGET ASSEMBLY & STORAGE
1295	Cushman Avenue	K12	GOLF COURSE MAINTENANCE SHOP
1296	Road to Physical Trng. Area	G11	POTABLE WATER BOOSTER PUMP HOU
1298	Moffett Road	M13	GOLF COURSE 9TH PUKA SNACK STA
1299	D Street	G17	REC DOCK, MARINA
1303	Access Road	M05	OBSERVATION BLEACHER
1304	Perimeter Road	N19	MAG MISSILE MAINTENANCE/ASSEMBLY B
1306	Third Street	J17	CREDIT UNION STORAGE
1307	Access Road	H16	AUTO HOBBY SHOP
1359	Access Road	N18	ADMIN FAC
1360	Mokapu Road	N18	MACS-2 OPS BLDG
1361	Mokapu Road	N18	AUTO ORGANIZATIONAL SHOP
1362	Access Road	N18	TRANSFORMER STATION
1365	Access Road	O18	GENERATOR BUILDING
1366	Access Road	O18	GENERATOR BUILDING
1367	Mokapu Road	K16	GENERAL WAREHOUSE
1368	Sumner Road	L22	MWR RENTAL LODGING
1369	Sumner Road	M22	MWR RENTAL LODGING
1370	Sumner Road	L22	MWR RENTAL LODGING
1371	Sumner Road	M22	MWR RENTAL LODGING
1372	N/A	L22	WATRFRONT OPS/SUP/FAC
1374	N/A	L22	SMOKEDRUM STORAGE
1375	N/A	L22	SCOUTS MEETING/STOR FAC
1376	Access Road	G15	WATER RECLAMATION FACILITY
1377	N/A	G15	WATER RECLAMATION FACILITY
1378	Access Road	G15	WATER RECLAMATION FACILITY
1379	N/A	G16	WATER RECLAMATION FACILITY
1380	N/A	F16	RETENTION POND
1381	Access Road	O16	WIND DIRECTION INDICATOR
1382	N/A	J22	WIND DIRECTION INDICATOR
1383	Lower Magazine Road South Fork	L7	SMOKEDRUM STORAGE
1384	Lower Magazine Road South Fork	K7	SMOKEDRUM STORAGE
1385	N/A	L22	FOOD STORAGE & PREP BLDG
1386	N/A	L22	MIST RDT & E STORAGE
1387	N/A	L22	RESTROOM
1388	N/A	L22	WATERFRONT OPS BLDG
1389	N/A	L22	MISC RDT & E STORAGE
1393	Sumner Road	L22	VET MAMMAL FAC
1394	Sumner Road	M22	MWR RENTAL LODGING
1395	Sumner Road	M22	MWR RENTAL LODGING
1396	Sumner Road	M22	RELIGIOUS RETREAT FAC
1397	N/A	L22	DETECTION EQUIP RD & T FAC
1399	Sumner Road	L22	4TH FORCE RECON DIVER
1400	Sumner Road	L22	4TH FORCE RECON BLDG
1402	Sumner Road	L18	TRANSFORMER STATION - UG
1403	N/A	G16	WATER RECLAMATION FACILITY
1404	Craig Avenue	G12	ADMIN/MERCHANDISE WAREHOUSE
1413	Access Road	G16	GENERAL STORAGE
1416	Craig Avenue	G13	GENERAL WAREHOUSE
1417	Fifth Street	H15	TRANSFORMER
1505	Cushman Avenue	K12	GENERAL WAREHOUSE
1509	Magazine Road	N8	MAG - SMALL ARMS/PYROTECH MAG

MCBH Facility Index for Base Map

Building #	Location	Grid	Description
1510	Magazine Road	M8	MAG - SMALL ARMS/PYRO MAG
1512	Magazine Road	M7	MAG HIGH EXPLOSIVE - UG
1513	Lower Magazine Road	M7	MAG HIGH EXPLOSIVE - UG
1514	Lower Magazine Road	L7	MAG HIGH EXPLOSIVE - UG
1515	Lower Magazine Road	L6	MAG HIGH EXPLOSIVE - UG
1516	Lower Magazine Road	L6	MAG HIGH EXPLOSIVE - UG
1517	Lower Magazine Road	L6	MAG HIGH EXPLOSIVE - UG
1518	Lower Magazine Road	L6	MAG HIGH EXPLOSIVE - UG
1519	Magazine Road	M7	GND LEVEL POTABLE STOR TNK
1520	Service Road	M5	SMALL ARMS RANGE
1528	Third Street	G14	SOFTBALL DIAMOND - LIGHTED
1531	Maclachlan Street	J10	PUMPHOUSE - FRESH WATER
1538	Lower Magazine Road	M7	BOOSTER PUMP HOUSE POTABLE
1539	Access Road	M6	READY MAGAZINE
1540	Service Road	M6	RESTROOM
1541	Mokapu Road	J13	VEHICLE BRIDGE-MOKAPU ROAD
1542	Third Street	G14	VEHICLE BRIDGE-THIRD STREET
1544	Daly Road	M7	ORDNACE OPS BLDG
1545	Third Street	J18	REFUELER VEHICLE SHOP
1551	Pennsylvania Avenue	H9	GENERAL WAREHOUSE
1563	Sixth Street	K17	AIRCRAFT TRUCK LOADING
1563A	Sixth Street	K17	AIRCRAFT TRUCK LOADING
1563B	Sixth Street	K17	AIRCRAFT TRUCK LOADING
1565	Harris Avenue	G11	HEAVY EQUIPMENT SHOP
1566	Lawrence Road	K12	SEWAGE PUMPING STATION
1571	Access Road	O4	UNDERGROUND STORAGE
1574	N/A	M5	R5 RANGE
1577	Access Road	N5	FIRE CONTROL POST
1578	Weapons Range Road	M6	PISTOL RANGE SHELTER
1583	G Street	H14	MINI GYM
1584	Weapons Range Road	L5	RIFLE RANGLE FACILITY OFF
1586	Lower Magazine Road	L7	MAG HIGH EXPLOSIVE - UG
1587	Lower Magazine Road	L7	MAG - UNDERGROUND MAGAZINE
1588	Lower Magazine Road	L6	FUSE & DETONATOR MAGAZINE
1589	Lower Magazine Road	L6	MAG - UNDERGROUND MAGAZINE
1590	N/A	L6	FUSE AND DET MAGAZINE
1591	Access Road	M6	READY MAGAZINE
1592	Weapons Range Road	M6	PISTOL RANGE SHELTER
1595	Third Street	G15	SOFTBALL FIELD & FAC
1596	First Street	J21	CLOUD HT INDICATOR CHK
1597	Cochran Place	G9	SEWAGE PUMPING STATION
1600	Access Road	N5	MAG - STORAGE BLDG RIFLE RANGE
1602	Access Road	P18	RECREATIONAL LODGING
1603	Access Road	N19	RECREATIONAL LODGING
1604	Fourth Street	H15	BEQ
1605	Access Road	N19	RECREATIONAL LODGING
1606	Access Road	N19	RECREATIONAL LODGING
1607	Mokapu Road	P18	PRESIDENTIAL COTTAGE
1608	Palikilo Road	O19	RECREATIONAL LODGING
1609	Palikilo Road	O18	RECREATIONAL LODGING
1610	Palikilo Road	O18	RECREATIONAL LODGING
1611	Palikilo Road	O18	RECREATIONAL LODGING
1612	Access Road	O18	RECREATIONAL LODGING
1613	Access Road	O18	RECREATIONAL LODGING
1614	Access Road	P18	SENIOR ENLISTED COTTAGE
1615	Access Road	K8	ELEC DISTR BLDG/SHELTER
1616	Fifth Street	H15	MECHANICAL EQUIP BLDG
1617	Perimeter Road	N20	FIRE FTNG TRAING FAC
1619	First Street	H18	GROUND SUPPORT EQUIP SHOP
1620	N/A	L22	WATERFRONT OPS FAC
1622	Access Road	G15	GENERAL STORAGE - PMO
1623	N/A	L22	WATERFRONT OPS FAC
1624	Sumner Road	M22	MWR RENTAL LODGING
1627	Sumner Road	L21	SEWAGE PUMPING STATION
1628	Sumner Road	M19	SEWAGE PUMPING STATION
1629	G Street	G14	ENLISTED CLUB - KAHUNA'S
1629A	G Street	G14	TRANSFORMER AT ENLISTED CLUB
1629B	G Street	G14	TRANSFORMER AT ENLISTED CLUB
1631	B Street	J18	AIRCRAFT WASHRACK
1632	Fifth Street	H15	BEQ
1633	Mokapu Road	H13	BEQ
1634	Third Street	G13	BEQ
1635	Third Street	G13	BEQ
1636	G Street	F15	SENTRY HOUSE
1637	G Street	F15	PASS OFFICE
1638	N/A	L22	NOSC
1640	N/A	L22	WATERFRONT OPS SUPPORT
1642	Malabey Court	J12	SCHOOL
1643	Magazine Road	M7	RESERVOIR POTABLE WATER
1644	Mokapu Road	J14	SHELTER - BASEBALL DUGOUT
1645	Mokapu Road	J15	SHELTER - BASEBALL DUGOUT
1647	Mokapu Road	J13	EQUIPMENT BLDG
1648	Third Street	G13	EQUIPMENT BLDG
1650	Sixth Street	K17	R & D LOT

MCBH Facility Index for Base Map

Building #	Location	Grid	Description
1651	Sumner Road	M22	MWR RENTAL LODGING OFFICE
1652	Sumner Road	M21	RUWS BLDG
1654	G Street	H14	BEQ
1655	Seldon Street	H13	BEQ
1656	Third Street	H13	BACHELORS ENLISTED QUARTERS
1657	N/A	G18	HELICOPTER LANDING PAD
1659	D Street	J16	HELICOPTER LANDING PAD
1660	N/A	L22	LAUNCHING RAMP - NOSC
1162	Sumner Road	L22	NOSC - PIER
1663	N/A	L22	QUAYWALL - NOSC
1665	N/A	G17	MARINA SHED
1666	Fifth Street	H15	BOWLING ALLEY
1666e	Fifth Street	J15	TRANSFORMER - NEAR BOWLING ALLEY
1667	Harris Avenue	H11	GAS & MORE, WASH & CO, FIRESTONE
1669	B Street	K18	VEHICLE WASH RACK
1670	N/A	G17	SEWAGE EJECTION STATION
1671	N/A	O18	SEWAGE PUMPING STATION
1672	Third Street	H16	AUTO SHELTER
1674	First Street	J21	FLOURIDATION FAC
1675	Seldon Street	H13	EQUIPMENT BLDG
1676	G Street	H14	EQUIPMENT BLDG
1677	Field Maintenance Roadway	G11	CARPENTER SHOP
1679	Reeves Road	L14	HOLDING TANK (SEWER)
1682	Access Road	G16	WATER RECLAMATION FACILITY
1683	N/A	G16	WATER RECLAMATION FACILITY
1684	N/A	G16	WATER RECLAMATION FACILITY
1686	Access Road	N14	GOLF COURSE PERSONNEL SHELTER
1687	Moffett Road	N13	GOLF COURSE PERSONNEL SHELTER
1688	Manning Street	M12	PERSONNEL SHELTER
1689	Access Road	L10	GOLF COURSE PERSONNEL SHELTER
1691	access road	J15	SHELTER - TENNIS COURT PERSONNEL
1693	Access Road	O18	PICNIC SHED
1694	C Street	J17	BASEBALL FIELD & FACILITY
1695	C Street	J17	BASEBALL FIELD & FACILITY
1696	Mokam Place	K8	SEWAGE PUMPING STATION
1697	Access Road	K8	TRANSFORMER STATION
1698	D Street	G17	BOATHOUSE
1699	Reeves Road	L14	WADING POOL-O' CLUB
2554	Manning Street	L12	KLIPPER COTTAGES
2555	Manning Street	L12	KLIPPER COTTAGES
2556	Manning Street	L13	KLIPPER COTTAGES
2557	Manning Street	L13	KLIPPER COTTAGES
2558	Manning Street	L13	KLIPPER COTTAGES
2757	Mokapu Road	P17	DETACHED CARPORT
3000	Third Street	H15	CHILLED WATER PLANT
3002	N/A	L22	CHILLED WATER PLANT
3003	C Street	H17	RECREATION PAVILION
3004	Fourth Street	H15	RECREATION PAVILION
3005	Access Road	G16	RECREATION PAVILION
3006	Fifth Street	H14	RECREATION PAVILION
3007	First Street	H17	GROUNDS EQIUPMENT STORAGE SHED
3010	Sumner Road	M22	RECREATION PAVILION
3011	Perimeter Road	M21	RECREATION PAVILION
3013	Field Maintenance Roadway	G12	FIELD MAINTENANCE BLDG
3014	Access Road	F12	FIELD MAINTENCE BLDG
3015	Craig Avenue	F12	SERVICE STATION
3015A	Craig Avenue	F12	WASH PAD AT CSSG RINSE FAC
3016	Craig Avenue	G12	PAINT/FLAMMABLE STORAGE
3017	Craig Avenue	G12	AUTO ORGANIZATIONAL SHOP
3018	Access Road	F12	REFRIGERANT MAINTENANCE SHOP
3019	Craig Avenue	G12	DISPATCH/TRUCKMASTER BLDG
3022	Reed Road	L15	CHILD PLAY AREA
3023	G Street	F15	AIRCRAFT MONUMENT
3024	G Street	F15	LVTP-5 MONUMENT
3025	Craig Avenue	F13	RECREATION PAVILION
3026	Access Road	M5	RANGE STORAGE BLDG
3027	Access Road	M5	RANGE STORAGE BLDG
3029	G Street	H14	BASKETBALL COURT
3030	E Street	G17	RECREATIONAL PIER
3031	E Street	J16	OUTDOOR MONUMENT
3035	Access Road	F11	OIL/WATER SEPARATOR
3036	Craig Avenue	G12	SUBSTATION
3037	G Street	H13	SEMPER FIT
3038	Third Street	G14	THE LODGE AT KANEOHE BAY
3039	Access Road	O5	STORAGE SHED
3040	Magazine Road	L5	ACADEMIC TRNG BLDG
3041	Magazine Road	L05	GROUNDS EQUIP SHED
3043	N/A	N20	LHA DECK
3044	G Street	H14	PRESS BOOTH
3044E	G Street	H14	TRANSFORMER AT PRESS BOOTH
3047	Access Road	J8	RECREATION PAVILION
3048	N/A	K12	PEDESTRIAN BRIDGE
3053	N/A	J18	VEHICLE REFUELING SHOP
3057	Mokapu Road	J13	TRANSFORMER STATION

MCBH Facility Index for Base Map

Building #	Location	Grid	Description
3063	D Street	G17	RECREATION PAVILION
3064	Perimeter Road	M21	RECREATION PAVILION
3071	G Street	G15	MARINE MART/SUBWAY/GAS LANES
3073	Perimeter Road	L21	HELICOPTER RINSE FACILITY
3074	Reed Road	L15	MCCS FAM SVC/LINKS
3076	Sumner Road	M20	FUEL BLADDER CONTAINMENT
3077	Sumner Road	M20	FUEL BLADDER CONTAINMENT
3078	Sumner Road	M20	FUEL BLADDER CONTAINMENT
3079	Sumner Road	M20	FUEL BLADDER CONTAINMENT
3081	Third Street	J17	HAZARDOUS WASTE MATERIAL STG B
3082	First Street	J20	FLAMMABLE MATERIAL STORAGE
3083	First Street	J20	FLAMMABLE MATERIALS STORAGE
3084	First Street	J20	FLIGHTLINE BLDG
3085	Sixth Street	K17	EYEWASH/HEAD FAC
3087	Sumner Road	L20	TAFDS TEST LAB
3088	Manning Street	L13	KLIPPER GOLF CENTER, SAM ADAMS GRILL, TIKI ISLAND
3089	Access Road	J16	MEDICAL DENTAL CLINIC
3090	Craig Avenue	G13	GENERAL STORAGE FAC
3091	Craig Avenue	G13	GENERAL STORAGE FAC
3093	Sumner Road	L21	MARINE RESERVE TRAINING BLDG
3094	Access Road	F12	MAINTENANCE FAC
3095	Road to Physical Trng. Area	F11	FIELD EQUIP STORAGE BLDG
3096	Access Road	J17	MILES FACILITY
3097	Access Road	G16	AUTO HOBBY SHOP
3099	Sumner Road	M19	STRAY ANIMAL KENNEL
4000	Mokapu Road	L17	MATCS-18 OPERATIONS FAC
4001	Third Street	G14	ENVIRONMENTAL PAVILION
4002	Lower Magazine Road	L05	ENVIRONMENTAL PAVILION
4004	Cushman Avenue	K12	GOLF COURSE PESTICIDE/PEST CNT
4005	Access Road	L16	SUPPLY WAREHOUSE
4007	Seldon Street	G12	TRANSFORMER STATION
4008	Seldon Street	G12	AIR CONDITIONING PLANT
4009	Fifth Street	H15	BN/BATT HQ
4010	Harris Avenue	H11	CO/BATT HQ
4011	Seldon Street	G11	CO/BATT HQ
4012	Craig Avenue	H12	CO/BATT HQ
4013	Craig Avenue	H12	CO/BATT HQ
4014	Seldon Street	H13	CO/BATT HQ
4015	Third Street	G13	CO/BATT HQ
4016	Access Road	G16	ADMIN OFFICES/ STOR
4017	Mokapu Road	H11	CO/BATT HQ
4018	N/A	L22	MARINE CORPS RESERVE TRAINING
4019	Harris Avenue	H11	CO/BATT HQ
4020	Harris Avenue	G11	CO/BATT HQ
4021	Harris Avenue	G11	CO/BATT HQ
4022	Mokapu Road	H12	CO/BATT HQ
4023	Craig Avenue	H12	CO/BATT HQ
4024	Craig Avenue	H12	CO/BATT HQ
4025	Mokapu Road	H12	CO/BATT HQ
4026	Craig Avenue	H12	CO/BATT HQ
4027	Craig Avenue	H12	ADMIN OFFICES/ STOR
4028	Craig Avenue	H12	ADMIN OFFICES/ STOR
4030	Third Street	G13	CO/BATT HQ
4031	Craig Avenue	G12	BN HQ
4032	Seldon Street	G12	CO/BATT HQ
4034	Craig Avenue	H12	3RD RADBN HQ
4035	First Street	H18	GSE SAND BLAST/PAINT BOOTH
4036	First Street	H18	GSE MNT HOLDING SHED
4037	Mokapu Road	G10	WASH RACK
4038	Access Road	G10	TRANSFORMER
4040	Mokapu Road	L17	SEWAGE PUMPING STATION
4041	C Street	J17	FLIGHT TRAINING FAC
4042	First Street	J20	EMERG GEN BLDG
4043	First Street	J20	ELEVATED PLATFORM
4044	First Street	J20	ELEVATED PLATFORM
4045	First Street	H17	SENTRY STATION
4046	First Street	H18	SENTRY STATION
4047	First Street	H19	SENTRY STATION
4048	First Street	J19	SENTRY STATION
4049	First Street	J19	SENTRY STATION
4050	Manning Street	L13	GOLF CART SHED
4051	First Street	H18	AUTO VEHICLE MAINT SHOP
4052	Third Street	G13	MAG ARMORY
4053	Mokapu Road	H11	MAG ARMORY
4054	B Street	K18	MAG 24 ARMORY
4055	C Street	J17	MAG ARMORY STATION
4057	Magazine Road	L05	WEAPONS RANGE TARGET OFFICE
4058	N/A	K12	PICNIC PAVILLION
4062	Third Street	G13	BASKETBALL COURT
4064	Third Street	J17	WASTE OIL STORAGE TANK
4071	Access Road	K08	STANDBY GEN
4074	G Street	G15	FIRE STATION
4075	Mokapu Road	L17	WAREHOUSE BLDG
4077	Road to Physical Trng. Area	G11	COMM-ELEC MAINTENANCE FAC

MCBH Facility Index for Base Map

Building #	Location	Grid	Description
4078	Harris Avenue	F11	WARE HOUSE
4079	Field Maintenance Roadway	G11	AUTO MAINTENANCE SHOP
4081	Perimeter Road	N20	ORDNANCE ASSEMBLY AREA
4082	G Street	G15	WALK-IN-REEFER
4083	Fifth Street	H15	BASKETBALL/VOLLEYBALL COURT
4086	N/A	K22	COMBAT ACFT LOADING AREA
4087	Access Road	K15	WATER RESERVOIR
4088	Harris Avenue	G10	MEDICAL WAREHOUSE
4090	N/A	H13	FOOTBRIDGE - WEST OF SHELDON STREET
4091	First Street	J20	RADAR APPROACH FAC
4092	N/A	J13	FOOTBRIDGE WEST OF MOKAPU SCHOOL
4099	Harris Avenue	G11	SUPPORT ADMIN FAC
5000	Access Road	G10	M777 GUN FACILITY
5001	Access Road	G10	M777 GUN FACILTY
5006	N/A	L22	GAS STORAGE SHED
5007	N/A	L22	UH MMRP MOORING CATWALK
5008	Access Road	G10	PAINT STORAGE FACILITY
5009	Mokapu Road	G10	EQUIPMENT STORAGE FACILITY
5011	Mokapu Road	G10	M777 GUN FACILITY
5014	Access Road	C10	CHLORINE/FLOURIDE INSP FAC
5015	Harris Avenue	F11	SEWAGE PUMPING STATION
5016	B Street	J18	SENTRY STATION
5017	Third Street	J18	SENTRY STATION
5019	Mokapu Road	L17	SENTRY STATION
5020	N/A	L21	AIRCRAFT POWER CHECK PAD
5022	Mokapu Road	H13	RECREATION PAVILION
5023	Lower Magazine Road	L06	MAG HIGH EXPLOSIVE - UG
5024	N/A	G11	VOLLEYBALL/BASKETBALL COURT
5026	First Street	H18	CONC PAD W/ UTILITY PANEL
5027	Third Street	J18	GENERATOR BLDG
5031	Access Road	F09	M777 GUN SHOP GUARD HOUSE
5032	Kekahuna Place	G09	SEWAGE PUMPING STATION
5033	Second Street	H17	SUBSTATION
5036	Sumner Road	L18	PRECISION APPROACH RADAR GEMB
5037	Third Street	H18	VAN PAD #1A
5038	Third Street	J18	VAN PAD #1B
5039	B Street	J18	VAN PAD #1C
5040	B Street	J18	VAN PAD #1D
5041	B Street	J18	VAN PAD #1-E
5042	B Street	J18	VAN PAD #1-F
5045	First Street	H18	VAN PAD 3
5046	N/A	N19	VAN PAD 4
5047	Third Street	J18	RESTROOM
5048	Perimeter Road	M19	TRANSFORMER PAD MOUNTED
5049	B Street	J18	RESTROOM 1
5050	B Street	J18	AIR COMPRESSOR SHED
5051	Third Street	J18	TRANSFORMER PAD MOUNTED
5052	First Street	J18	TRANSFORMR PAD
5053	B Street	J18	AIR COMPRESSOR SHED
5054	B Street	J18	TRANSFORMER PAD MOUNTED
5055	B Street	J18	CHEMICAL STOR/WASTE COLLECT SH
5056	B Street	J18	SENTRY STATION
5057	First Street	H19	AIR COMPRESSOR SHED
5058	First Street	H18	TRANSFORMER PAD MOUNTED
5059	First Street	H18	AIR COMPRESSOR SHED
5060	First Street	H18	PAD MOUNTED TRANSFORMER
5061	Perimeter Road	N19	HAZARDOUS MATERIAL FAC
5062	Perimeter Road	N19	AIR COMPRESSOR SHED
5063	Third Street	J18	PAD MOUNTED TRANS
5064	First Street	J18	AIR COMPRESSOR SHED
5065	B Street	J18	FUEL TANK ENCL (TAC VAN PADS)
5066	Sixth Street	K17	COMMISSARY FOOD INSPECTION FAC
5068	Mokapu Road	L17	NBC STORAGE FAC
5069	B Street	J18	CORROSION CONTROL HANGAR
5070	Fifth Street	H14	BEQ
5071	G Street	H14	BEQ
5072	Mokapu Road	O18	HAZ - TRANSFER SHED
5073	N/A	H17	HAZ - TRANSFER SHED
5077	N/A	M21	AIRCRAFT COMPASS CALIB PAD
5078	N/A	H18	HAZ WASTE TRANSFER SHED
5082	N/A	K12	YOUTH CENTER
5083	N/A	G14	STATION EVENTS SIGN
5084	Mokapu Road	J14	PRESS BOOTH/RISLEY FIELD
5086	N/A	J14	SIGN CORNER RISLEY FIELD
5087	N/A	C10	MOKAPU ENTRANCE SIGN
5089	Reed Road	L15	WWII IMPACT MONUMENT
5090	Access Road	G15	MILITARY WORKING DOG KENNEL
5091	Access Road	G16	WATER RECLAMATION FACILITY
5092	N/A	G15	HECO SUBSTATION/ H3 ENTRANCE
5093	Mokapu Road	H13	RECREATION PAVILION
5096	Craig Avenue	F12	HAZ WASTE TRANSFER SHED
5097	Third Street	J17	HAZ - TRANSFER SHED
5099	Craig Avenue	G13	WAREHOUSE ADMIN FAC
6001	Field Maintenance Roadway	G11	WASH PAD TACTICAL

MCBH Facility Index for Base Map

Building #	Location	Grid	Description
6002	Harris Avenue	F11	INTERGRATED NAL INTELL SYS FAC
6003	Access Road	F11	SPECIAL COMPARTMENTED INFO FAC
6004	E Street	H17	PW SHOP MATL STORAGE
6006	Road to Physical Trng. Area	F10	GAS CHAMBER
6009	Access Road	F15	MONITORING WELL 1
6010	Access Road	F15	MONITORING WELL 2
6011	G Street	F15	MONITORING WELL 3
6012	Access Road	E15	MONITORING WELL 4
6013	Access Road	F14	MONITORING WELL 5
6014	Access Road	F14	MONITORING WELL 6
6015	G Street	G14	MONITORING WELL- MW-7
6016	Road to Physical Trng. Area	F10	MONITORING WELL 8
6017	Road to Physical Trng. Area	G11	MONITORING WELL 9
6018	Seldon Street	G11	MONITORING WELL 10
6019	Mokapu Road	H11	MONITORING WELL- MW-11
6020	Harris Avenue	H10	MONITORING WELL 12
6021	Mokapu Road	H10	MONITORING WELL
6022	Mokapu Road	G9	MONITORING WELL 14
6023	Mokapu Road	G9	MONITORING WELL 15
6025	Mokapu Road	N18	AUTO MAINTENANCE FAC
6027	Mokapu Road	G10	GUARD HOUSE 3RD MAR MOTOR
6028	Mokapu Road	G10	VEH WASH PAD
6029	Access Road	G10	ATTENDANTS BOOTH
6030	Mokapu Road	G9	MAINT SHED
6031	Mokapu Road	G9	MAINTENANCE SHOP
6032	Mokapu Road	G9	GUARD HOUSE - 3RD MAR MOTOR
6033xf	Mokapu Road	G9	TRANSFORMER PAD MOUNTED
6034	Fifth Street	H14	MECHNICAL ROOM
6035	Fifth Street	J14	MECHNICAL ROOM
6036	Cushman Avenue	H12	COMBINED ARMS STAFF TRAINER (C
6037	N/A	G14	NATURE TRAIL/BRIDGES/SIGNS
6038	Access Road	F10	BATTLE SKILLS OBSTACLE COURSE
6039	Access Road	F12	COMM ELEC MAINTENANCE FAC
6040	Third Street	J17	EQUIPMENT LOAD TEST FAC
6042	Road to Physical Trng. Area	F10	RAPELLNG TOWER
6043X	Access Road	O18	RADOME MOCKUP SLAB
6044	N/A	N20	READY SERVICE LOCKER
6045	N/A	J20	READY SERVICE LOCKER
6046	N/A	J20	READY SERVICE LOCKER
6047	N/A	J20	READY SERVICE LOCKER
6048	N/A	J20	READY SERVICE LOCKER
6049	N/A	H19	READY SERVICE LOCKER
6050	N/A	H19	READY SERVICE LOCKER
6051	N/A	H19	READY SERVICE LOCKER
6052	N/A	H19	READY SERVICE LOCKER
6053	N/A	H19	READY SERVICE LOCKER
6054	N/A	H19	READY SERVICE LOCKER
6055	N/A	H18	READY SERVICE LOCKER
6056	N/A	H18	READY SERVICE LOCKER
6057	N/A	H18	READY SERVICE LOCKER
6058	Access Road	F12	SEWAGE PUMPING STATION
6061	Weapons Range Road	L6	RICOSHET CATCHER
6062	Harris Avenue	F11	SEWAGE PUMPING STATION
6064	Perimeter Road	N19	WASH RACK
6065	E Street	H17	FLAMMABLE STORAGE FACILITY
6066	First Street	H17	FLAMMABLE STORAGE FACILITY
6067	First Street	H17	FLAMMABLE STORAGE FACILITY
6068	First Street	H17	FLAMMABLE STORAGE FACILITY
6073	Mokapu Road	G9	VEH LUBE RAMP
6074	Mokapu Road	G9	VEH LUBE RAMP
6075	Road to Physical Trng. Area	F10	LEADERSHIP REACTION COURSE
6076	Maclachlan Street	J11	TELECOM EQUIPMENT BLDG
6078	Access Road	G16	COMM SUPPORT STOR FAC
6079	First Street	J19	FLIGHTLINE LOX FAC
6080	N/A	N4	R7 RANGE
6081	Castaneda Street	J15	GENERATOR FAC
6082	Sixth Street	K17	HYGIENE STORAGE
6084	Pennsylvania Avenue	J9	WATER PUMP STATION
6085	Access Road	F12	VEH WASH PAD - B1284
6086	Sixth Street	K17	VEH WASH PAD - B373
6088	Harris Avenue	H11	COMMISSARY
6090	Lower Magazine Road South Fork	L7	MONITORING WELL
6091	Lower Magazine Road	L6	MONITORING WELL
6092	Access Road	K7	MONITORING WELL MW-3
6093	Middaugh Street	K6	MONITORING WELL MW-4
6094	Middaugh Street	K6	MONITORING WELL
6095	Middaugh Street	K6	MONITORING WELL
6096	Lawrence Road	K12	SEWAGE PUMPING STATION
6098	Mokapu Road	N18	CONC SLAB
6100	Lower Magazine Road	M8	ORDNANCE ADMIN FAC
6101	B Street	L17	TACAN TOWER
6102	B Street	L17	TACAN SHED
6103	B Street	L17	TACAN EQUIP SHED
6105	B Street	L17	WASH PAD/OIL WATER SEP

MCBH Facility Index for Base Map

Building #	Location	Grid	Description
6107	N/A	M16	AIRCRAFT RINSE FACILITY
6109	Harris Avenue	J11	MAIN EXCHANGE
6111	Cushman Avenue	J11	CHILD DEVELOPMENT FACILITY
6112	Maclachlan Street	J11	CHILD DEVELOPMENT FACILITY
6113	Maclachlan Street	J11	CHILD DEVELOPMENT FACILITY
6114	Maclachlan Street	J11	CHILD DEVELOPMENT FACILITY
6115	Maclachlan Street	J11	CHILD DEVELOPMENT FACILITY
6116	Yarnell Road	M16	AIRCRAFT RINCE
6117	Yarnell Road	M16	TRANSFORMER - MCC BLDG
6128	Third Street	J17	GME VEH MAINT SHED
6137	Moffett Road	M14	CO-MINGLED FUEL STORAGE
6138	N/A	L14	CO-MINGLED FUEL STORAGE
6139	Third Street	J18	CO-MINGLED FUEL STORAGE
6140	Third Street	J17	CO-MINGLED FUEL STORAGE
6141	N/A	J15	CO-MINGLED FUEL STORAGE
6142	N/A	N18	CO-MINGLED FUEL STORAGE
6143	Third Street	G14	CO-MINGLED FUEL STORAGE
6144	Mokapu Road	J13	CO-MINGLED FUEL STORAGE
6145	Third Street	G13	CO-MINGLED FUEL STORAGE
6146	Mokapu Road	H11	CO-MINGLED FUEL STORAGE
6147	Mokapu Road	H11	CO-MINGLED FUEL STORAGE
6148	Mokapu Road	H11	CO-MINGLED FUEL STORAGE
6149	Mokapu Road	H11	CO-MINGLED FUEL STORAGE
6150	Mokapu Road	H11	CO-MINGLED FUEL STORAGE
6151	Selden Street	H13	CO-MINGLED FUEL STORAGE
6152	Middaugh Street	K8	CO-MINGLED FUEL STORAGE
6153	Craig Avenue	F12	CO-MINGLED FUEL STORAGE
6154	N/A	J13	CO-MINGLED FUEL STORAGE
6155	N/A	H13	CO-MINGLED FUEL STORAGE
6156	Puuhawaiiloa Road	K15	AST ENCLOSURE
6157	First Street	J20	AST ENCLOSURE
6158	N/A	J16	CO-MINGLED FUEL STORAGE
6159	N/A	H18	CO-MINGLED FUEL STORAGE
6160	N/A	K17	CO-MINGLED FUEL STORAGE
6161	Second Street	H16	CO-MINGLED FUEL STORAGE
6162	C Street	J18	CO-MINGLED FUEL STORAGE
6163	N/A	H18	CO-MINGLED FUEL STORAGE
6164	Palikilo Road	M19	READY SERVICE LOCKER
6165	Palikilo Road	M19	READY SERVICE LOCKER
6166	Palikilo Road	M19	READY SERVICE LOCKER
6167	Palikilo Road	M19	READY SERVICE LOCKER
6168	Lower Magazine Road South Fork	L7	MAG HIGH EXPLOSIVE
6169	Lower Magazine Road South Fork	L7	MAG HIGH EXPLOSIVE
6170	Lower Magazine Road South Fork	L7	MAG HIGH EXPLOSIVE
6171	Access Road	N19	RECREATIONAL LODGING
6180	First Street	J19	DIRECT REFUELER SUP OFFICE
6181	First Street	J19	APRON ELEC BLDG
6182	C Street	J17	REFUELING TRUCK FOR BRAC
6183	Palikilo Road	M19	ACFT ENGINE TEST FAC
6184	Palikilo Road	O18	LOX/LNZ STG FAC
6407	Access Road	L16	HAZMAT STG FAC
6408	Reed Road	K16	HAZWAST PROCESSING BLDG
6409	Access Road	L16	HAZWASTE ADMIN BLDG
6410	Access Road	O04	BEACH GUARD BUNKER
6421	N/A	K17	SCOREBOARD
6468	C Street	K17	FINN BUILDING
6469	B Street	K18	AVIATION SUPPLY FAC
6470	First Street	J19	TACTICAL SUPPORT FAC
6471	B Street	J19	FIRE PUMP BLDG
6472	B Street	J19	FIRE PUMP WATER STORAGE TANK
6473	B Street	J19	FIRE PUMP WATER STORAGE PUMP
6474	Reed Road	L16	HAZMAT/HAZWASTE FAC
6475	N/A	N20	HELO LANDING PAD
6476	Perimeter Road	K22	READY MAGAZINE
6477	Harris Avenue	J11	MOKAPU MALL, FOOD COURT
6478	Sumner Road	M20	MCCS TEMP STORAGE
6479	Third Street	J18	JET ENGINCE FUEL STORAGE
6496A	Sixth Street	K17	AIRCRAFT TRUCK LOADING FAC
6500	Access Road	M05	FBI RANGE
6501	N/A	K12	VEHICLE BRIDGE
6502	Access Road	G16	ICE BLAST FAC
6504	C Street	K17	TANK TRUCK LOADING FACILITY
6506-1	Sixth Street	K17	MOGAS FUEL TANK
6506-2	Sixth Street	K17	MOGAS FUEL TANK
6506-3	Sixth Street	K17	DIESEL FUEL STORAGE
6506-4	Sixth Street	K17	DIESEL FUEL STORAGE
6506-5	Sixth Street	K17	JP8 FUEL STORAGE
6507	Access Road	M5	FBI PISTOL RANGE TOWER
6508	N/A	M5	PISTOL RANGE CLASSROOM
6510	C Street	J17	POL EQUIP STG BLDG
6511	N/A	G15	YOUTH FIELDS/DUG OUT/SCOREBOARD
6514	C Street	K17	SHELTER - BASEBALL DUGOUT
6515	C Street	J17	SHELTER - BASEBALL DUGOUT
6516	C Street	K17	STORAGE

MCBH Facility Index for Base Map

Building #	Location	Grid	Description
6517	N/A	J17	SCOREBOARD
6518	C Street	J17	SHELTER - BASEBALL DUGOUT
6519	C Street	J17	SHELTER - BASEBALL DUGOUT
6520	C Street	J17	STORAGE VERIFY
6521	C Street	J17	PRESS BOTH
6522	C Street	H17	PESTICIDE STORAGE FAC
6523	Third Street	G14	PRESS BOOTH
6526	Third Street	J18	RESTROOM - WOMEN
6533	G Street	G15	LODGING
6534	G Street	G15	TLF
6535	G Street	G14	LODGING
6536	Third Street	G14	LODGING
6537	N/A	G14	SEWER PUMPING STATION
6631	N/A	H9	BASKETBALL CT 9
6632	N/A	H9	BASKETBALL CT 10
6633	N/A	H9	BASKETBALL CT 11
6643	G Street	G14	TRANSFORMER
6644	Mokapu Road	H11	POST OFFICE
6648	Harris Avenue	H11	CAR WASH
6652	Puuhawaiiloa Road	K15	LOAD BANK FOR ASR
6653	Puuhawaiiloa Road	K15	TRANSFORMERSTATION T1
6654	Puuhawaiiloa Road	K15	DASK TOWER
6655	Puuhawaiiloa Road	K15	EQUIPMENT SHELTER FOR ASR
6657	Third Street	K18	SONOBUOY STORAGE
6658	N/A	H16	GRAND STAND
6659	G Street	G14	TLF REC PAVILLION
6660	Third Street	G13	BQ RECREATION SHELTER
6661	G Street	H14	MISC PERSONNEL WEATHER SHELTER
6662	N/A	H19	SMOKING SHED
6663	Mokapu Road	J15	SKATEBOARD RAMPS
6664	N/A	K17	SMOKING SHED
6665	N/A	M22	RECREATION PAVILLION
6667	Puuhawaiiloa Road	K15	EMERGENCY GENERATOR
6668	First Street	J21	TROOP MOVEMENT SHELTER
6677	Mokapu Road	H11	CHAPEL
6678	N/A	L16	SELF STO FACILITY, BLDG1
6679	N/A	L16	SELF STO FACILITY, BLDG 2
6680	N/A	L16	SELF STO FACILITY, BLDG 3
6681	N/A	L16	SELF STO FACILITY, BLDG 4
6682	N/A	L16	SELF STO FACILITY, BLDG 5
6683	N/A	L16	SELF STO FACILITY, BLDG 6
6685	Access Road	L16	HAZARDOUS WASTE FAC
6686	Lane	G15	SHELTER - SOFTBALL DUGOUT
6687	Third Street	G15	SHELTER - SOFTBALL DUGOUT
6688	Lane	G15	STORAGE SHED
6689	Third Street	G14	SHELTER - POLLUCK DUGOUT
6690	Third Street	G13	SHELTER - POLLUCK DUGOUT
6691	Mokapu Road	H11	MCDONALDS
6692	G Street	F15	WORLD WAR II MEMORIAL
6693	Mokapu Road	J14	SUPER PLAYGROUND
6695	N/A	K21	LZ 7
6696	N/A	K21	LZ 8
6697	Access Road	F12	CORROSION REPAIR FAC
6699	Harris Avenue	H11	WINDWARD COMM FEDERAL CREDIT UNION
6700	N/A	F15	MECHANICAL SECURITY BARRIERS
6701	Sixth Street	K17	HELICOPTER FLT TRNG FACILITY
6702	N/A	M16	MAG TF WAREHOUSE #1 TEMP
6703	N/A	M16	MAG TF WAREHOUSE #2 TEMP
6704	N/A	G14	EMS FACILITY
6705	Harris Avenue	H11	3RD MAR TRAINING PAVILION
6706C3	Maclachlan Street	J11	CHILD DEVELOPMENT CENTER
6707	N/A	M19	MOTORCYCLE/EVOC TRAINING COURSE
6708C3	Road to Physical Trng. Area	G11	VCCT TRAILER
6709C3	Road to Physical Trng. Area	G10	G3 TRAINING AUDITORIUM
6710C3	Road to Physical Trng. Area	G11	HEAT TRAINING FACILITY
6711C3	Craig Avenue	G12	CLB3 DEHUMIDIFIED TFS
6712C3	B Street	K17	CLB3 DEHUMIDIFIED TFS
6713C3	Sixth Street	K17	CLB3 DEHUMIDIFIED TFS
6714C3	Access Road	G15	PMO 1ST RESPONDER EQUIP SHED
6715C3	Palikilo Road	M19	EOD STORAGE TFS
6716C3	Field Maintenance Roadway	G11	CLB3 DEHUMIDIFIED STRUCTURE
6717C3	Mokapu Road	H11	3RD MAR MODULAR ARMORY
6718C3	Mokapu Road	H11	3RD MAR MODULAR ARMORY
6719C3	Mokapu Road	H11	3RD MAR MODULAR ARMORY
6720R	Harris Avenue	H11	TEMP CO/ BATT HQ
6721R	Harris Avenue	H11	TEMP CO/ BATT HQ
6722R	Harris Avenue	H11	TEMP CO/ BATT HQ
6723R	Harris Avenue	H11	TEMP CO/ BATT HQ
6724R	Mokapu Road	H11	MODULAR ARMORY
6725R	Mokapu Road	H11	MODULAR ARMORY
6726R	Mokapu Road	H11	MODULAR ARMORY
6727R	Mokapu Road	H11	MODULAR ARMORY
6728R	Harris Avenue	F11	TEMP CO/ BATT HQ
6729R	Harris Avenue	F11	TEMP CO/ BATT HQ

MCBH Facility Index for Base Map

Building #	Location	Grid	Description
6730R	Access Road	F12	TEMP CO/ BATT HQ
6731R	Harris Avenue	F11	TEMP CO/ BATT HQ
6732R	Harris Avenue	F11	TEMP CO/ BATT HQ
6733R	Access Road	F10	TEMP OPERATIONAL STORAGE
6734R	Access Road	F10	TEMP OPERATIONAL STORAGE
6735R	Access Road	F10	TEMP STORAGE ADMIN SUPPORT
6736R	Access Road	F10	TEMP STORAGE ADMIN SUPPORT
6745	N/A		E85 FUEL STORAGE TANK
6746C3	Sumner Road	L20	ARMY AWG TRAILER
6747	N/A	J12	BASKETBALL COURT - MOKAPU SCHOOL
6747	N/A	J12	BASKETBALL CT MOKAPU SCH
6748	N/A	K14	BASKETBALL CT 3
6749	N/A	J15	BASKETBALL CT 1
6750	N/A	K8	BASKETBALL CT 7
6751	Sumner Road	L21	4TH FORCE RECON WASHPAD
6752	Sumner Road	L21	WASHPAD COVERING
6753	Bingham Way	K13	YOUTH CENTER
6754	N/A	K13	TRASH ENCLOSURE
6755C3	Road to Physical Trng. Area	G11	MODULAR RANGE MAINT FACILITY
6756C3	Road to Physical Trng. Area	G11	MODULAR RANGE STORAGE A
6757C3	Road to Physical Trng. Area	G11	MODULAR RANGE STORAGE B
6758C3	Road to Physical Trng. Area	G11	MODULAR RANGE STORAGE C
6759C3	Mokapu Road	G10	CHP SHELTER A
6760C3	Mokapu Road	G10	CHP SHELTER B
6761C3	Mokapu Road	G10	CHP SHELTER C
6762C3	Mokapu Road	G10	CHP SHELTER D
6763C3	Mokapu Road	G10	CHP SHELTER E
6764C3	Mokapu Road	G10	CHP SHELTER F
6765C3	Access Road	F11	AAV AIR DEHYDRATION STRUCT
6766	G Street	G15	GAS LANES AT MARINE MART
6767	Third Street	G13	GENERAL WAREHOUSE
6768	Third Street	G13	GENERAL WAREHOUSE
6769	Seldon Street	G13	GENERAL WAREHOUSE
6770	Magazine Road	M07	ORDNANCE OPS BUILDING
6771C3	Road to Physical Trng. Area	G11	USMC OPERATOR DRIV SIMULATOR
6772	Third Street	G14	LODGING
6774C3	First Street	H18	MALS TFS @ GSE COMPOUND
6775C3	Mokapu Road	N18	MALS TFS@ B6025
6776C3	Perimeter Road	N19	MALS TFS @ B1304
6779	Harris Avenue	J10	CHILLED WATER PLANT
6781C3	Road to Physical Trng. Area	G11	SAVT
6782	Maclachlan Street	K11	CHILD DEVELOPMENT CENTER
6783	McClennan Drive	K11	CHILD DEVELOPMENT CENTER
6784	McClennan Drive	K11	CHILD DEVELOPMENT CENTER
6785	McClennan Drive	K11	CHILD DEVELOPMENT CENTER
6786	Access Road	F11	WASH PAD
6787	N/A	F11	OIL WATER SEPARATOR
6788	C Street	J17	CH53E/ AH1W CFTD PAD
6791	N/A	K11	CDC- TRASH ENCLOSURE
6792	N/A	K13	YAC- MULTIPURPOSE FIELD
6793	N/A	K13	YAC- GRASS VOLLEYBALL COURT
6795	N/A	J21	PAPI AT RUNWAY 4 END
6796	N/A	N16	PAPI AT RUNWAY 22 END
6797	First Street	J19	FLIGHT LINE MARINE MART
6798	N/A	J19	TRASH ENCLOSURE AT FLMM
6799	C Street	H17	GROUNDS MAINT STORAGE
6800	D Street	G17	MARINA SUPPORT BUILDING
6803	Third Street	J18	TACTICAL SUPPORT VAN PAD
6807	Access Road	O18	SEABEE COTTAGE
6808	Access Road	G10	PAD WITH POWER
6813	N/A	M19	MOTOCYCLE COURSE TRAINING PAVILION
6851	B Street	K18	PAD WITH POWER FOR MOD ARMORY
6852	B Street	K18	PAD WITH POWER FOR MOD ARMORY
6857	N/A	J21	TACAN CHECK POINT SIGN
6862C3	Access Road	G15	PMO CAMMS SHELTER
6863C3	B Street	J18	MALS TFS AT B375
6864C3	Third Street	J18	MALS TFS AT B375
6865C3	Third Street	K18	MALS TFS AT B6469
7000	Mokapu Road	H13	BEQ
7001	Mokapu Road	H12	BEQ
7002	Mokapu Road	H13	BEQ
7003	Mokapu Road	H13	BEQ
7004	Mokapu Road	H13	BEQ
7005	Mokapu Road	H13	BEQ
7006	Seldon Street	H13	BEQ
7007	Seldon Street	H13	BEQ
7008	Mokapu Road	H13	OUTDOOR PLAYING COURTS
7009	Mokapu Road	H13	OUTDOOR PLAYING COURTS
7010	Mokapu Road	J13	SAND VOLLEYBALL
7011	Mokapu Road	H13	SAND VOLLEYBALL
7012	Mokapu Road	H13	PAVILLION
7013	Craig Avenue	H12	SEWAGE PUMPING STATION
7014	Mokapu Road	H12	BUS STOP SHELTER
7015	Mokapu Road	H13	MOTORCYCLE SHELTER

MCBH Facility Index for Base Map

Building #	Location	Grid	Description
7016	N/A	H13	BICYCLE SHELTER
7017	N/A	H13	BICYCLE SHELTER
7018	Seldon Street	H13	MOTORCYCLE SHELTER
7019	Mokapu Road	H12	MOTORCYCLE SHELTER
7020	Craig Avenue	H12	MOTORCYCLE SHELTER
7021	G Street	H13	BEQ NAVY
7022	G Street	H13	BEQ NAVY
7023	Seldon Street	H13	BEQ NAVY
7024	Seldon Street	H13	BEQ NAVY
7025	Mokapu Road	H13	BEQ NAVY
7026	Mokapu Road	H13	SEWAGE PUMPING STATION
7027	G Street	H14	ADMIN BLDG
7028	Seldon Street	H13	PAVILION
7029	Seldon Street	H13	PAVILION
7032	Mokapu Road	H13	TRASH ENCLOSURE
7033	G Street	H14	TRASH ENCLOSURE
7034	G Street	H14	MECHANICAL ENCLOSURE
7035	Mokapu Road	H12	TRASH ENCLOSURE
7036	Mokapu Road	H12	TRASH ENCLOSURE
7037	Craig Avenue	H12	TRASH ENCLOSURE
7038	Mokapu Road	H13	TRASH ENCLOSURE
7040	Seldon Street	H13	PAD MOUNTED TRANS
7043	Seldon Street	H14	PAD MOUNTED TRANS
7044	Seldon Street	H13	PAD MOUNTED TRANS
7046	Craig Avenue	H12	WOUNDED WARRIOR BEQ
7047	Craig Avenue	H12	BEQ
7048	Craig Avenue	H12	ADMIN FAC
7049	Mokapu Road	H12	TRASH ENCLOSURE
7050	Sixth Street	K17	TRAFFIC CONTROL FAC
7051	Sixth Street	K17	RADAR AIR TRAFFIC FACILITY
7052	N/A	K17	SWITCH
7053	N/A	H12	SWITCH/XFMR PADS
7055	Mokapu Road	H12	TRASH ENCLOSURE
7056	Mokapu Road	H11	TRASH ENCLOSURE
7057	Craig Avenue	H12	BEQ
7058	Craig Avenue	H12	BEQ
7059	Mokapu Road	H12	BEQ
7060	Mokapu Road	H11	GEAR WASHRACK
7061	Craig Avenue	H12	BEQ
7062	Seldon Street	H12	BEQ
7063	Seldon Street	G12	BEQ
7064	Craig Avenue	H12	CHILLER PLANT
7065	Craig Avenue	H12	TRASH ENCLOSURE
7066	Mokapu Road	H12	TRASH ENCLOSURE
7067	Seldon Street	G12	TRASH ENCLOSURE
7068	Seldon Street	H13	GEAR WASH FACILITY AT BEQ
7220	Seldon Street	H14	BEQ
7221	G Street	H14	MECH (CHILLER PLANT) BLDG
7222	G Street	H14	GEAR WASH PAD
7223	G Street	H14	BIKE SHELTER (20 LOCKER)
7224	G Street	H14	PAVILLION AT BEQ 7220
7225	G Street	H14	BICYCLE SHELTER (12 LOCKER)
7226	Seldon Street	H14	GEAR WASH PAD
7227	Seldon Street	H13	PAVILLION AT BEQ 7220
7228	Seldon Street	H14	BICYCLE SHELTER (14 LOCKER)
7229	Third Street	G14	TRASH ENCLOSURE
7230	Lawrence Road	J13	1571 LAWRENCE- FC ADMIN OFFC
7231	McClennan Drive	K11	FC WAREHOUSE
7232	Bingham Way	K13	5081 BINGHAM WAY - COMMU CNTR
7233	G Street	H14	VEHICLE CARPORT
7234	G Street	H14	VEHICLE CARPORT
7235	G Street	H14	VEHICLE CARPORT
7236	G Street	H14	VEHICLE CARPORT
7237	G Street	H14	VEHICLE CARPORT
7238	G Street	H14	VEHICLE CARPORT
7239	G Street	G14	VEHICLE CARPORT
7240	Third Street	G14	VEHICLE CARPORT
8593	Brown Drive	K9	CAMPION DR - COMMU CNTR
TFS	Perimeter Road	N19	ACFT ENGINE TEST FACILITY TFS

Highlight = Sites of Interest / Investigate

MCTAB Facilities List

Bldg No.	Year Built	Structure
700	1957	TRAINER FACILITY
701	1957	UTILITY SUPPORT BUILDING
702	1957	OPERATIONAL HAZ/FLAMM STRG
703	1969	UTILITY SUPPORT BUILDING
705	1991	OUTDOOR CLASSROOM
706	1950	VEHICULAR BRIDGE - BELLOWS

Pearl City Warehouse Annex Facilities List

Bldg No.	Year Built	Structure
71	1942	WAREHOUSE
72	1942	WAREHOUSE
73	1942	WAREHOUSE
74	1943	STORAGE SHED
75	1943	STORAGE SHED
77	1942	FLAMMABLE STOREHOUSE
251	1988	SENTRY HOUSE
772	1943	GATEHOUSE
4072	1985	LOADING RAMP AT P.C. ANNEX

Puuloa Training Facility List

Bldg No.	Year Built	Structure
P1	1919-1921	SMALL ARMS RANGE - OUTDOOR
2	1919-1921	SMALL ARMS RANGE - OUTDOOR
19	1940	MARCORPS ORG STRG
44	1943	ARMORY
48	1942	ACADEMIC INSTRUCT BLDG
136	1940	OP HAZARD/FLAMMABLE STORAGE
148	1940	MARCORPS ORG STRG
149	1940	MARCORPS ORG STRG
150	1940	MARCORPS ORG STRG
151	1940	MARCORPS ORG STRG
152	1940	MARCORPS ORG STRG
153	1940	MARCORPS ORG STRG
182	1940	GUARD HOUSE
154	1960	MARCORPS ORG STRG
155	1960	MARCORPS ORG STRG
172	1955	RANGE SUPT BLDG
173	1960	SMALL ARMS RANGE - OUTDOOR
175	1962	SMALL ARMS RANGE - OUTDOOR
176	1962	TRAINING COURSE
177	1960	MARCORPS ORG STRG
179	1962	SMALL ARMS RANGE - OUTDOOR
200	1986	INDOOR PHYSICAL FITNESS FACI
300	1986	BACHELOR ENLISTED QUARTERS
301	1986	BACHELOR ENLISTED QUARTERS
302	1986	TPU BARRACKS - E1/E4
303	1986	TPU BARRACKS - E1/E4
400	1986	OUTDOOR PLAYING COURT
401	1986	RANGE OPS BUILDING
624	1991	SMALL ARMS PYROTECHNIC MAG
206043	1947	IMPACT AREA NON-DUDDED
220045	1963	SECURITY FENCE
220046	1964	FENCE SECURITY
220288	1954	PUULOA RANGE ACCESS ROAD

Appendix B:
Interviews

Oral Interview Questionnaire
Preliminary Assessments/Site Inspections for Potential Perfluorinated Compound Sites
Contract Number N62742-12-D-1829, CTO 0044

Date: 06/26/2018 Installation: Manana Housing

Please provide responses to the questions below for each potentially PFC-impacted site used or managed by your command. Where supporting documentation is available, please list supporting documentation at end of questionnaire and forward it with the completed questionnaire to William.Stohler@AECOM.com. If you have any questions, please contact William Stohler at 808-356-5377 (office) or [redacted] (cellular).

Interview Location: Phone Interview
Buildings/Sites Covered: Bldg. 68 Fire Station #5 **Conducted by:** Sara Coffey

RESPONDENT CONTACT INFORMATION

Name	Command	Role/Responsibility	Telephone	Email
[redacted]	Federal Fire Dept	Engineer	[redacted]	

QUESTIONS:

1. **COMMAND/FUNCTIONAL BUILDING LIST**: Provide a list of buildings with current and past uses (or building names) and a current POC for each building.
   Answer:

2. **GENERAL LIST OF POTENTIAL AFFF SOURCES**: Are any of the following facilities present on your installation (check applicable boxes)?
   Answer: AFFF is only stored on the fire truck located at the station. There has not been storage outside the truck for at least 10 years. There has not been any foam testing or release of foam around the fire station, as it is strictly forbidden.

   ☐ AFFF storage ☐ Aircraft maintenance facilities ☐ Aircraft/vehicle crash/fire site
   ☐ Biosolids application areas (sewage solids/sludge) ☐ Chemical manufacturing facilities
   ☐ Chrome plating facilities ☐ Docks/piers ☐ Dry docks
   ☐ Fire stations/departments ☐ Fire training areas ☐ Hazardous material/waste storage
   ☐ Hangars ☐ Landfills ☐ Refineries ☐ Runways ☐ Shipyards
   ☐ Tanks (ASTs/USTs)/fueling racks/bulk fuel storage terminals ☐ Vehicle maintenance shops

   List building numbers/names/locations for checked sources.

3. **FIRE TRAINING AREAS:** If fire training facilities are present within your installation, please answer the following:
   a. List name(s)/ phone number(s)/ Location(s).
      Answer:
   b. Are there any training records available? If you are not sure, is there a POC we can obtain this information?
      Answer:
   c. How was fire suppressant handled, maintained and disposed?
      Answer:
   d. Do you know how the burned waste was disposed? If not, do you have contact information for the fire training POC?
      Answer:

Oral Interview Questionnaire
Preliminary Assessments/Site Inspections for Potential Perfluorinated Compound Sites
Contract Number N62742-12-D-1829, CTO 0044

Date: 06/26/2018 Installation: Manana Housing

4. **CRASH/FUEL FIRE RESPONSE SITES:** Do you know of any fuels-related fires (vehicle, fuel, or aircraft fires), which were extinguished by the fire department using foam suppressants, or of any foamed runways prepared for emergency landings?
Answer:
   a. List the location(s), date(s), and volume of suppressants, if known. If you are not sure, is there a Fire department POC we can obtain this information?
   Answer:

5. **PERMANENT FIRE SUPPRESSION SYSTEMS:** Did any of the buildings checked under number 2 above have permanent fire suppression systems installed at any time between 1949 and 2010+ that may have used AFFF?
Answer:
   a. List the types of fire suppressants stored, the storage period, and quantities stored.
   Answer:
   b. Were active tests of the fire suppression systems performed (e.g., hangar tests)? If so, how often, and what quantities of what types of fire suppressants were utilized (AFFF suppressants only)?
   Answer:
   c. How are the fire suppressants handled, maintained and disposed?
   Answer:
   d. Were there any documented accidental releases?
   Answer:

6. **CHROME PLATING FACILITIES**: If metal plating facilities were identified in number 2 above, please answer the following:
   a. List the building number(s), location(s), date(s) of use, and volume of suppressants utilized, if known.
   Answer:

7. **LANDFILLS OR DISPOSAL AREAS:** If there any landfills or disposal areas within your installation, please answer the following:
Answer:
   a. List the landfill names, locations, dates of use, and type of waste disposal.
   Answer:

8. **ADDITIONAL INFORMATION:** For sites/buildings identified under number 2 above, but not discusses under numbers 3 through 7, please provide additional information regarding potential PFC sources.
Answer:

Oral Interview Questionnaire
Preliminary Assessments/Site Inspections for Potential Perfluorinated Compound Sites
Contract Number N62742-12-D-1829, CTO 0044

Date: 3/23/2016 Installation: Camp Smith

Please provide responses to the questions below for each potentially PFC-impacted site used or managed by your command. Where supporting documentation is available, please list supporting documentation at end of questionnaire and forward it with the completed questionnaire to William.Stohler@AECOM.com. If you have any questions, please contact William Stohler at 808-356-5377 (office) or [redacted] (cellular).

Interview Location: Phone
Buildings/Sites Covered: Camp Smith **Conducted by:** Rachel Joaquin

RESPONDENT CONTACT INFORMATION

Name	Command	Role/Responsibility	Telephone	Email
[redacted]	Camp Smith	Captain	[redacted]	

QUESTIONS:

1. **COMMAND/FUNCTIONAL BUILDING LIST**: Provide a list of buildings with current and past uses (or building names) and a current POC for each building.
   Answer:
   We have empty containers and a few gallons to put in the truck. We carry approximately 110 gallons on two trucks and have 30 gallons in the reserve. Battalion Chief Holt would know more about the reserve 808-257-1426. Hickam is the reserve now; once the supply is depleted at Camp Smith, that's it. We will need to get more from Hickam.
   The supply tech Brenda 808-222-7109 from HQ in Pearl Harbor may have records. Captain Kitamura was housed at Camp Smith and didn't think they stored any AFFF. Brenda would probably only know about the past 3-5 years for AFFF storage.

   Follow-up Interview on 06/25/2018:
   We no longer store AFFF reserve at the fire station. The reserve is now located on Pearl Harbor. There have been no foam releases on the areas surrounding the fire station.

2. **GENERAL LIST OF POTENTIAL AFFF SOURCES**: Are any of the following facilities present on your installation (check applicable boxes)?
   Answer:
   ☐ AFFF storage ☐ Aircraft maintenance facilities ☐ Aircraft/vehicle crash/fire site
   ☐ Biosolids application areas (sewage solids/sludge) ☐ Chemical manufacturing facilities
   ☐ Chrome plating facilities ☐ Docks/piers ☐ Dry docks
   ☐ Fire stations/departments ☐ Fire training areas ☐ Hazardous material/waste storage
   ☐ Hangars ☐ Landfills ☐ Refineries ☐ Runways ☐ Shipyards
   ☐ Tanks (ASTs/USTs)/fueling racks/bulk fuel storage terminals ☐ Vehicle maintenance shops

   List building numbers/names/locations for checked sources.

3. **FIRE TRAINING AREAS:** If fire training facilities are present within your installation, please answer the following:
   a. List name(s)/ phone number(s)/ Location(s).
      Answer:
   b. Are there any training records available? If you are not sure, is there a POC we can obtain this information?
      Answer:

c. How was fire suppressant handled, maintained and disposed?
Answer:

d. Do you know how the burned waste was disposed? If not, do you have contact information for the fire training POC?
Answer:

4. **CRASH/FUEL FIRE RESPONSE SITES:** Do you know of any fuels-related fires (vehicle, fuel, or aircraft fires), which were extinguished by the fire department using foam suppressants, or of any foamed runways prepared for emergency landings?
Answer:

a. List the location(s), date(s), and volume of suppressants, if known. If you are not sure, is there a Fire department POC we can obtain this information?
Answer:

5. **PERMANENT FIRE SUPPRESSION SYSTEMS:** Did any of the buildings checked under number 2 above have permanent fire suppression systems installed at any time between 1949 and 2010+ that may have used AFFF?
Answer:

a. List the types of fire suppressants stored, the storage period, and quantities stored.
Answer:

b. Were active tests of the fire suppression systems performed (e.g., hangar tests)? If so, how often, and what quantities of what types of fire suppressants were utilized (AFFF suppressants only)?
Answer:

c. How are the fire suppressants handled, maintained and disposed?
Answer:

d. Were there any documented accidental releases?
Answer:

6. **CHROME PLATING FACILITIES**: If metal plating facilities were identified in number 2 above, please answer the following:

a. List the building number(s), location(s), date(s) of use, and volume of suppressants utilized, if known.
Answer:

7. **LANDFILLS OR DISPOSAL AREAS:** If there any landfills or disposal areas within your installation, please answer the following:
Answer:

a. List the landfill names, locations, dates of use, and type of waste disposal.
Answer:

8. **ADDITIONAL INFORMATION:** For sites/buildings identified under number 2 above, but not discusses under numbers 3 through 7, please provide additional information regarding potential PFC sources.
Answer:

Oral Interview Questionnaire
Preliminary Assessments/Site Inspections for Potential Perfluorinated Compound Sites
Contract Number N62742-12-D-1829, CTO 0044

Date: 3/22/2016 Installation: MCBH

Please provide responses to the questions below for each potentially PFC-impacted site used or managed by your command. Where supporting documentation is available, please list supporting documentation at end of questionnaire and forward it with the completed questionnaire to William.Stohler@AECOM.com. If you have any questions, please contact William Stohler at 808-356-5377 (office) or [redacted] (cellular).

Interview Location: MCBH Fire Station
Buildings/Sites Covered: Bldg 242 and MCBH Facilities **Conducted by:** Charlotte Rangel

RESPONDENT CONTACT INFORMATION

Name	Command	Role/Responsibility	Telephone	Email
[redacted]	MCBH Fed Fire	Fire Captain	[redacted]	[redacted]

QUESTIONS:

1. **COMMAND/FUNCTIONAL BUILDING LIST**: Provide a list of buildings with current and past uses (or building names) and a current POC for each building.
   Answer:

2. **GENERAL LIST OF POTENTIAL AFFF SOURCES**: Are any of the following facilities present on your installation (check applicable boxes)?
   Answer:

☐ AFFF storage	☐ Aircraft maintenance facilities	☐ Aircraft/vehicle crash/fire site
☐ Biosolids application areas (sewage solids/sludge)		☐ Chemical manufacturing facilities
☐ Chrome plating facilities	☐ Docks/piers	☐ Dry docks
☐ Fire stations/departments	**X** Fire training areas	☐ Hazardous material/waste storage
X Hangars	☐ Landfills ☐ Refineries	☐ Runways ☐ Shipyards
☐ Tanks (ASTs/USTs)/fueling racks/bulk fuel storage terminals		☐ Vehicle maintenance shops

   List building numbers/names/locations for checked sources:
   Answer: Need to check with Thomas Costa at Bldg 242. He is the facilities guy.

3. **FIRE TRAINING AREAS:** If fire training facilities are present within your installation, please answer the following:
   a. List name(s)/ phone number(s)/ Location(s).
      Answer:
   b. Are there any training records available? If you are not sure, is there a POC we can obtain this information?
      Answer:
   c. How was fire suppressant handled, maintained and disposed?
      Answer:
   d. Do you know how the burned waste was disposed? If not, do you have contact information for the fire training POC?
      Answer:

Oral Interview Questionnaire
Preliminary Assessments/Site Inspections for Potential Perfluorinated Compound Sites
Contract Number N62742-12-D-1829, CTO 0044

Date: 3/22/2016 Installation: MCBH

4. **CRASH/FUEL FIRE RESPONSE SITES:** Do you know of any fuels-related fires (vehicle, fuel, or aircraft fires), which were extinguished by the fire department using foam suppressants, or of any foamed runways prepared for emergency landings?
Answer:
   a. List the location(s), date(s), and volume of suppressants, if known. If you are not sure, is there a Fire department POC we can obtain this information?
   Answer: Need to check with Crash Crew at Bldg 6822.

5. **PERMANENT FIRE SUPPRESSION SYSTEMS:** Did any of the buildings checked under number 2 above have permanent fire suppression systems installed at any time between 1949 and 2010+ that may have used AFFF?
Answer: Bldg 5069 is the only building that I am aware of with a permanent fire suppression system.
   a. List the types of fire suppressants stored, the storage period, and quantities stored.
   Answer:
   b. Were active tests of the fire suppression systems performed (e.g., hangar tests)? If so, how often, and what quantities of what types of fire suppressants were utilized (AFFF suppressants only)?
   Answer:
   c. How are the fire suppressants handled, maintained and disposed?
   Answer:
   d. Were there any documented accidental releases?
   Answer:

6. **CHROME PLATING FACILITIES**: If metal plating facilities were identified in number 2 above, please answer the following:
   a. List the building number(s), location(s), date(s) of use, and volume of suppressants utilized, if known.
   Answer:

7. **LANDFILLS OR DISPOSAL AREAS:** If there any landfills or disposal areas within your installation, please answer the following:
Answer:
   a. List the landfill names, locations, dates of use, and type of waste disposal.
   Answer:

8. **ADDITIONAL INFORMATION:** For sites/buildings identified under number 2 above, but not discusses under numbers 3 through 7, please provide additional information regarding potential PFC sources.
Answer: Each fire truck contains 70 gallons of AFFF. This fire station has 3 trucks. Camp Smith has bulk of supplies.

Appendix C:
Photo Logs

MCBH Kaneohe Bay B101 Hangar 1 FSS water (2) / 2016-03-29 09:56

MCBH Kaneohe Bay B101 Hangar 1 FSS water (3) / 2016-03-29 09:56

MCBH Kaneohe Bay B101 Hangar 1 FSS water (4) / 2016-03-29 09:57

MCBH Kaneohe Bay B101 Hangar 1 FSS water (5) / 2016-03-29 09:57

MCBH Kaneohe Bay B101 Hangar 1 FSS water (6) / 2016-03-29 09:57

MCBH Kaneohe Bay B101 Hangar 1 FSS water / 2016-03-29 09:56

MCBH Kaneohe Bay B102 Hangar 2 unfired pressure vessel (2) / 2016-03-29 10:09

MCBH Kaneohe Bay B102 Hangar 2 unfired pressure vessel (3) / 2016-03-29 10:09

MCBH Kaneohe Bay B102 Hangar 2 unfired pressure vessel (4) / 2016-03-29 10:09

MCBH Kaneohe Bay B102 Hangar 2 unfired pressure vessel (5) / 2016-03-29 10:10

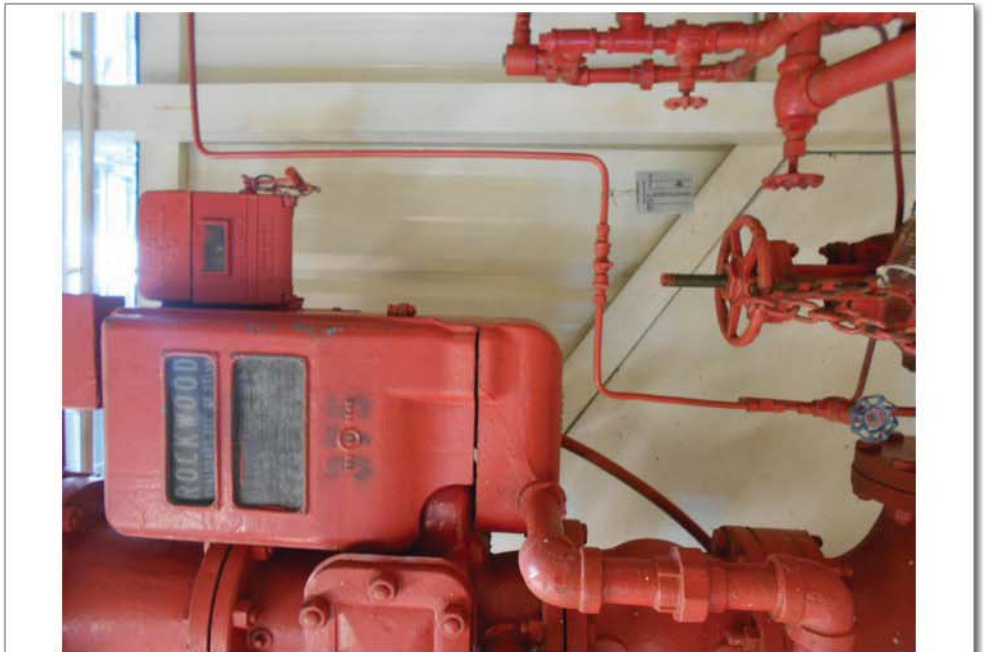
MCBH Kaneohe Bay B102 Hangar 2 unfired pressure vessel / 2016-03-29 10:09

MCBH Kaneohe Bay B103 Hangar 3 FSS water pumps / 2016-03-29 10:51

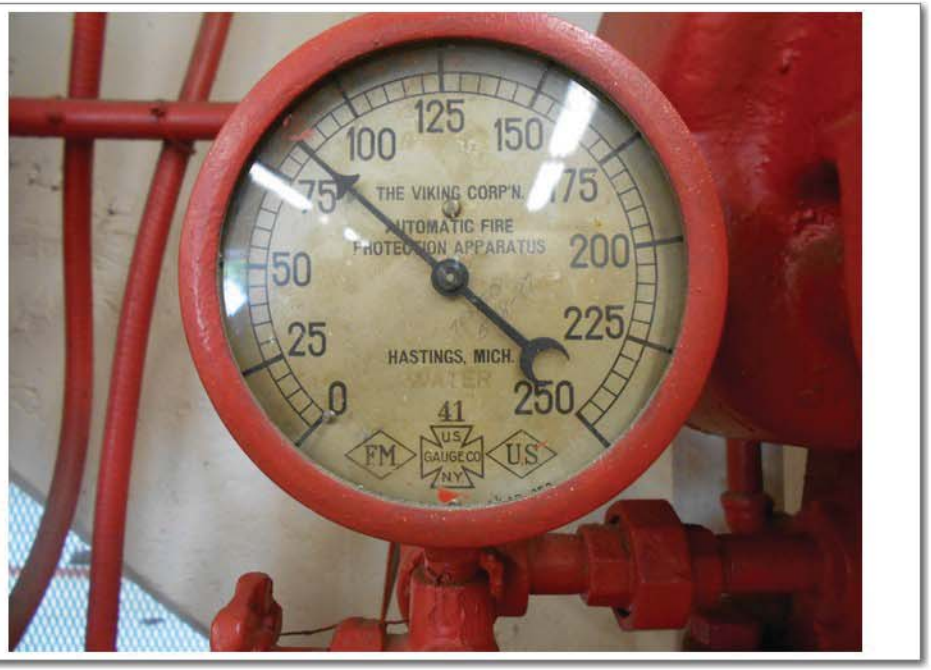
MCBH Kaneohe Bay B104 Hangar 4 FSS water pumps / 2016-03-29 10:47

MCBH Kaneohe Bay B105 Hangar 5 FSS water pumps / 2016-03-29 10:37

MCBH Kaneohe Bay B375 FSS water pumps - tested 1987 (2) / 2016-03-29 13:27



MCBH Kaneohe Bay B375 FSS water pumps - tested 1987 (3) / 2016-03-29 13:27



MCBH Kaneohe Bay B375 FSS water pumps - tested 1987 / 2016-03-29 13:26

MCBH Kaneohe Bay B1617 6 pipes / 2016-03-29 08:49

MCBH Kaneohe Bay B1617 abandoned tank / 2016-03-29 09:02

MCBH Kaneohe Bay B1617 AST, shed - overgrown vegetation / 2016-03-29 09:02

MCBH Kaneohe Bay B1617 Fire Training Pit / 2016-03-29 08:45

MCBH Kaneohe Bay B1617 FTP (2) / 2016-03-29 08:46

MCBH Kaneohe Bay B1617 FTP (3) / 2016-03-29 08:47

MCBH Kaneohe Bay B1617 FTP / 2016-03-29 08:46

MCBH Kaneohe Bay B1617 FTP 6 pipes / 2016-03-29 08:46

MCBH Kaneohe Bay B1617 FTP Drain / 2016-03-29 08:46

MCBH Kaneohe Bay B1617 FTP grassy area (2) / 2016-03-29 08:47

MCBH Kaneohe Bay B1617 FTP grassy area / 2016-03-29 08:46

MCBH Kaneohe Bay B1617 FTP sump (2) / 2016-03-29 08:47

MCBH Kaneohe Bay B1617 FTP sump / 2016-03-29 08:47

MCBH Kaneohe Bay B1617 FTP / 2016-03-29 08:47

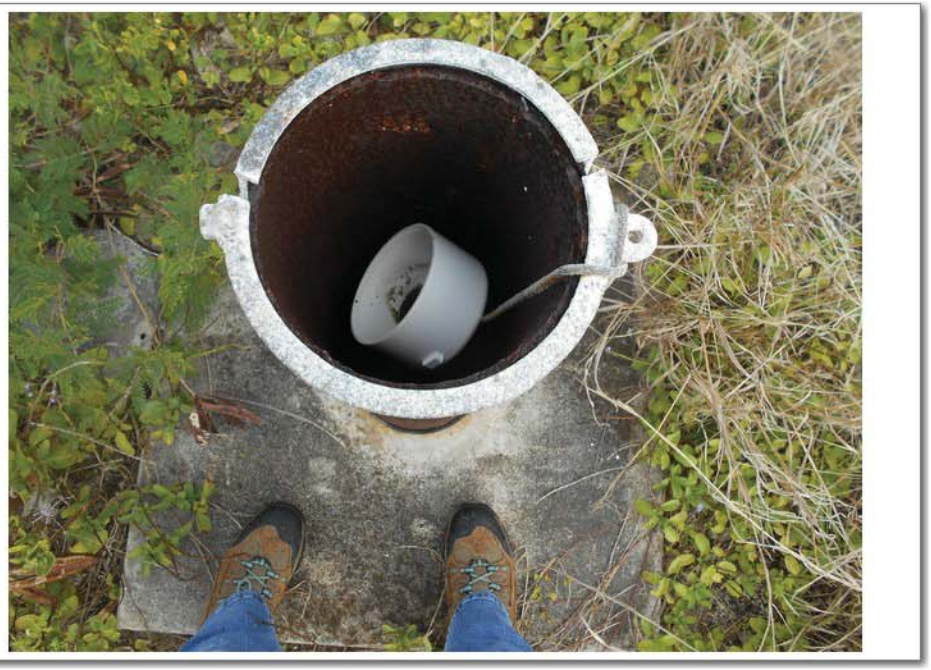
MCBH Kaneohe Bay B1617 grass growing as a cornered border around FTP (2) / 2016-03-29 09:03

MCBH Kaneohe Bay B1617 grass growing as a cornered border around FTP (3) / 2016-03-29 09:04

MCBH Kaneohe Bay B1617 grass growing as a cornered border around FTP / 2016-03-29 09:03

MCBH Kaneohe Bay B1617 grassy area facing abandoned plane / 2016-03-29 08:51

MCBH Kaneohe Bay B1617 JP 5 AST / 2016-03-29 09:01



MCBH Kaneohe Bay B1617 Monitoring well N of FTP (2) / 2016-03-29 08:57

MCBH Kaneohe Bay B1617 Monitoring well N of FTP (3) / 2016-03-29 08:58

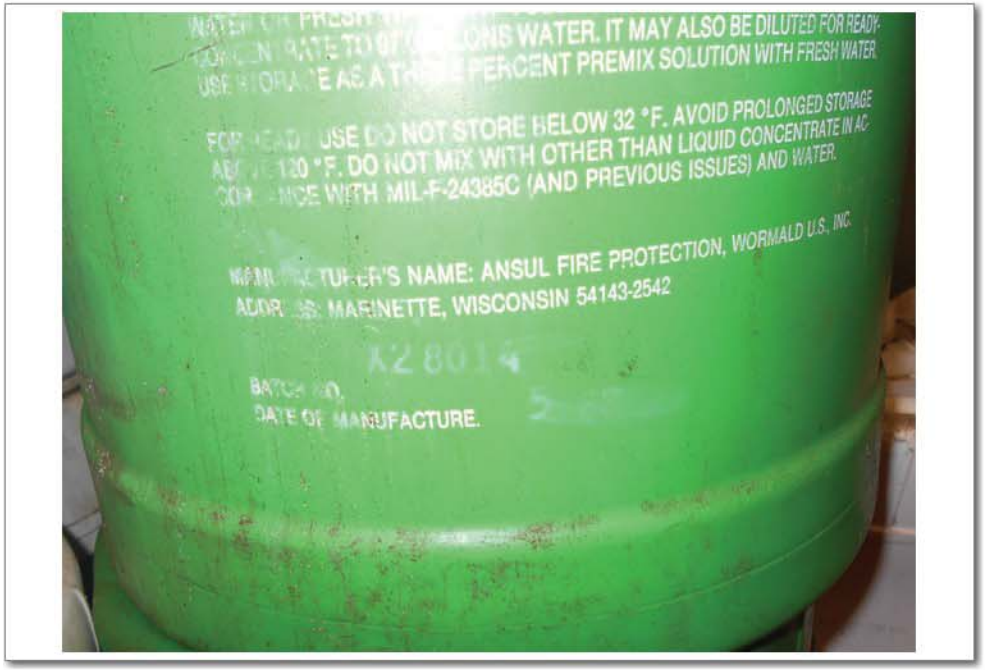
MCBH Kaneohe Bay B1617 Monitoring well N of FTP / 2016-03-29 08:57

MCBH Kaneohe Bay B1617 Monitoring well S of FTP (2) / 2016-03-29 08:55

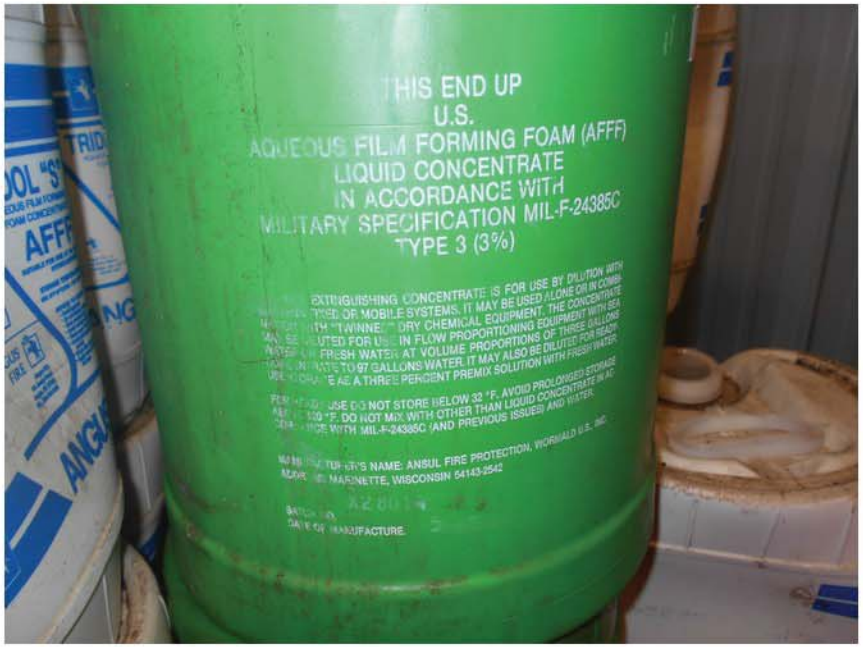
MCBH Kaneohe Bay B1617 Monitoring well S of FTP / 2016-03-29 08:55

MCBH Kaneohe Bay B1617 shrub surrounding piping / 2016-03-29 09:01

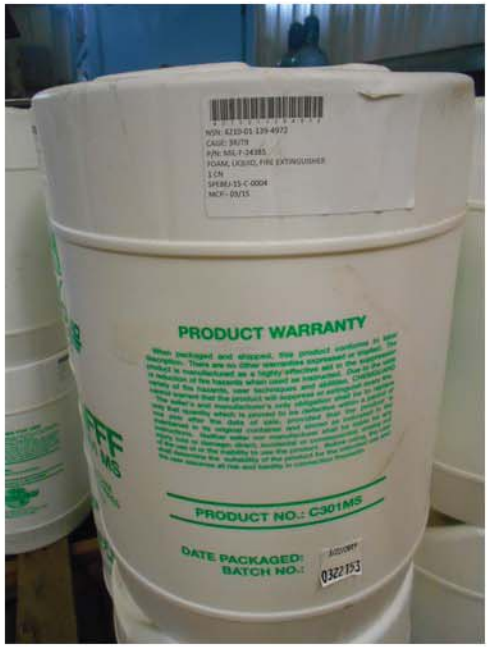
MCBH Kaneohe Bay B1617 Stair structure for 6 pipes / 2016-03-29 08:49



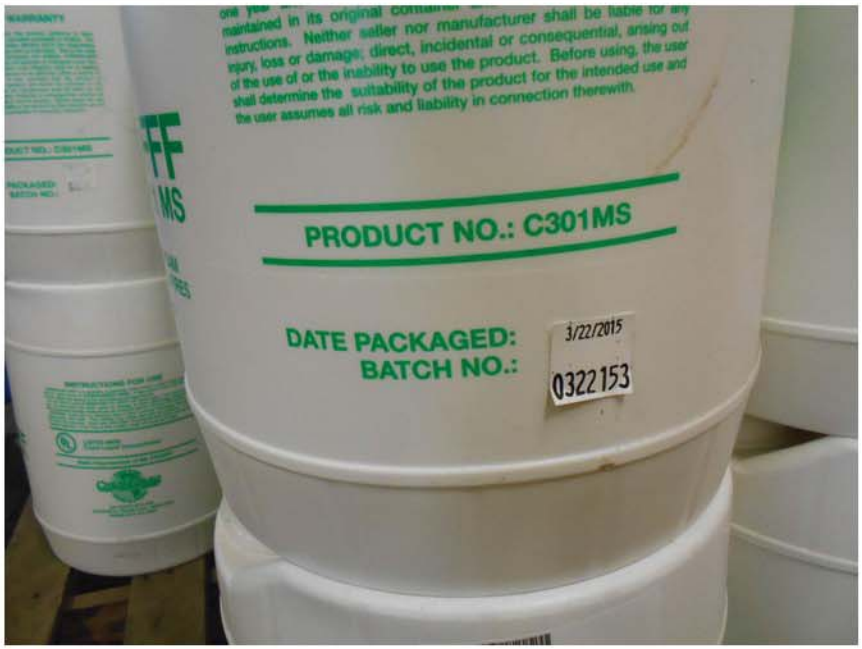
MCBH Kaneohe Bay B5068 AFFF 5gal drum 1988 Green (2) / 2016-03-22 09:54



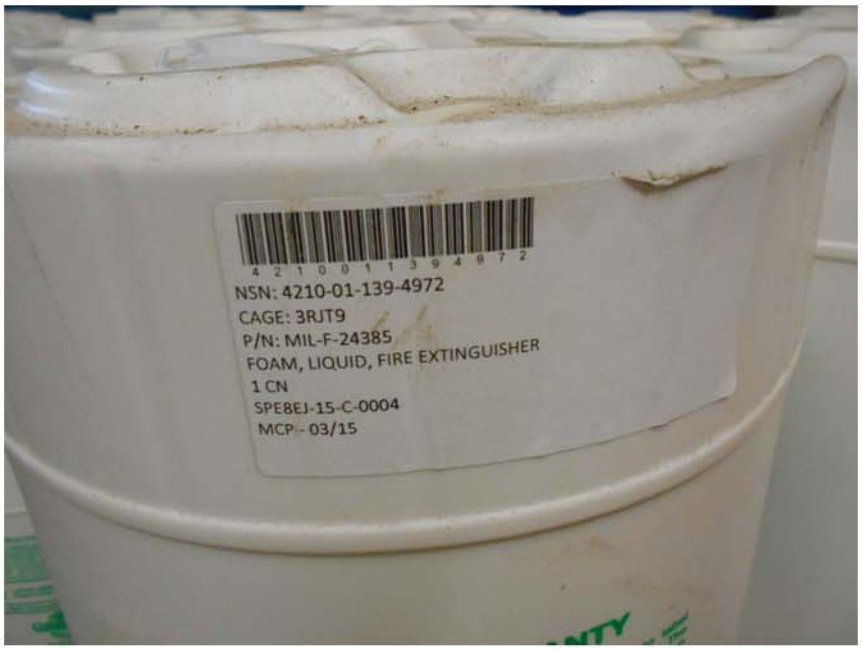
MCBH Kaneohe Bay B5068 AFFF 5gal drum 1988 Green / 2016-03-22 09:54



MCBH Kaneohe Bay B5068 AFFF 5gal drum CHEM GUARD 2015 White (2) / 2016-03-22 09:56



MCBH Kaneohe Bay B5068 AFFF 5gal drum CHEM GUARD 2015 White (3) / 2016-03-22 09:57



MCBH Kaneohe Bay B5068 AFFF 5gal drum CHEM GUARD 2015 White label / 2016-03-22 09:57

MCBH Kaneohe Bay B5068 AFFF 5gal drum CHEM GUARD 2015 White / 2016-03-22 09:55

MCBH Kaneohe Bay B5068 AFFF 5gal drum CHEM GUARD 2015 whtblue (2) / 2016-03-22 09:55

MCBH Kaneohe Bay B5068 AFFF 5gal drum CHEM GUARD 2015 whtblue / 2016-03-22 09:55

MCBH Kaneohe Bay B5068 ANSULITE whtred 5gal / 2016-03-22 10:00

MCBH Kaneohe Bay B5068 Exterior / 2016-03-22 10:03

MCBH Kaneohe Bay B5068 Palletbarrels of AFFF (2) / 2016-03-22 10:02

MCBH Kaneohe Bay B5068 Palletbarrels of AFFF / 2016-03-22 09:56

MCBH Kaneohe Bay B5068 TRIDOL S labeling concentrate (2) / 2016-03-22 09:59

MCBH Kaneohe Bay B5068 TRIDOL S labeling concentrate / 2016-03-22 09:59

MCBH Kaneohe Bay B5069 AFFF AST (2) / 2016-03-29 13:35

MCBH Kaneohe Bay B5069 AFFF AST (3) / 2016-03-29 13:36

MCBH Kaneohe Bay B5069 AFFF AST pumps (2) / 2016-03-29 13:37

MCBH Kaneohe Bay B5069 AFFF AST pumps / 2016-03-29 13:36

MCBH Kaneohe Bay B5069 AFFF AST sign 32,281 capacity / 2016-03-29 13:37

MCBH Kaneohe Bay B5069 AFFF AST / 2016-03-29 13:35

MCBH Kaneohe Bay B5069 AFFF drainage (2) / 2016-03-29 13:40

MCBH Kaneohe Bay B5069 AFFF drainage / 2016-03-29 13:39

MCBH Kaneohe Bay B5069 AFFF piping in bldg & drainage (2) / 2016-03-29 13:39

MCBH Kaneohe Bay B5069 AFFF piping in bldg & drainage / 2016-03-29 13:38

MCBH Kaneohe Bay B5069 concrete pad on SW side of bldg / 2016-03-29 13:09

MCBH Kaneohe Bay B5069 drainage area on NW side of bldg / 2016-03-29 13:11

MCBH Kaneohe Bay B5069 drainage pit on NW side of bldg / 2016-03-29 13:42

MCBH Kaneohe Bay B5069 drainage pond on NW side of bldg / 2016-03-29 13:11

MCBH Kaneohe Bay B5069 exterior (2) / 2016-03-29 13:05

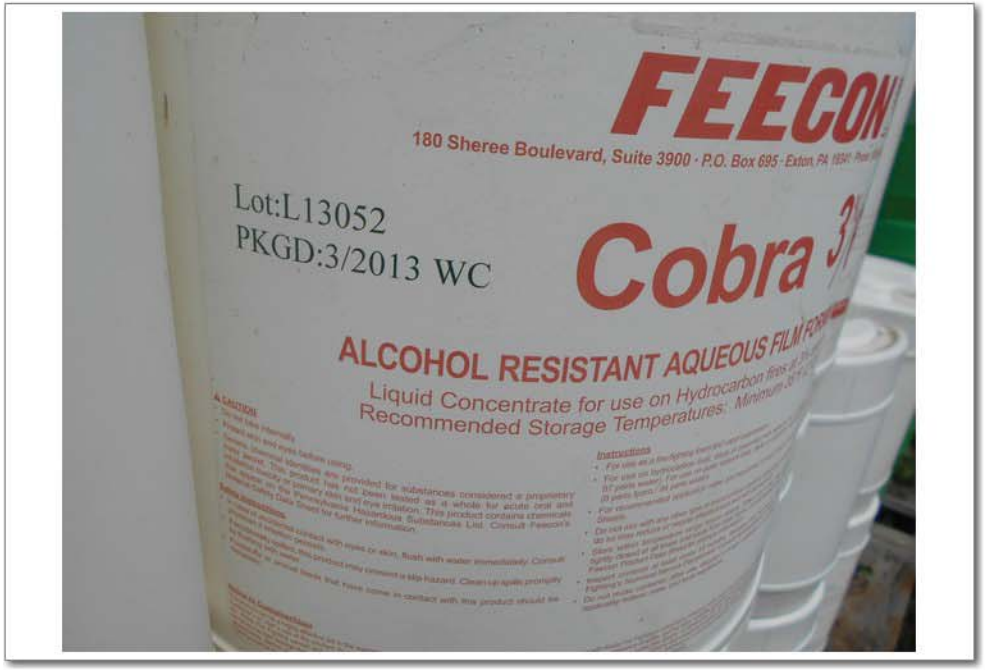
MCBH Kaneohe Bay B5069 exterior / 2016-03-29 13:04

MCBH Kaneohe Bay B5069 grassy area (2) / 2016-03-29 13:05

MCBH Kaneohe Bay B5069 grassy area / 2016-03-29 13:05

MCBH Kaneohe Bay B5069 unlabeled AST - water / 2016-03-29 13:40

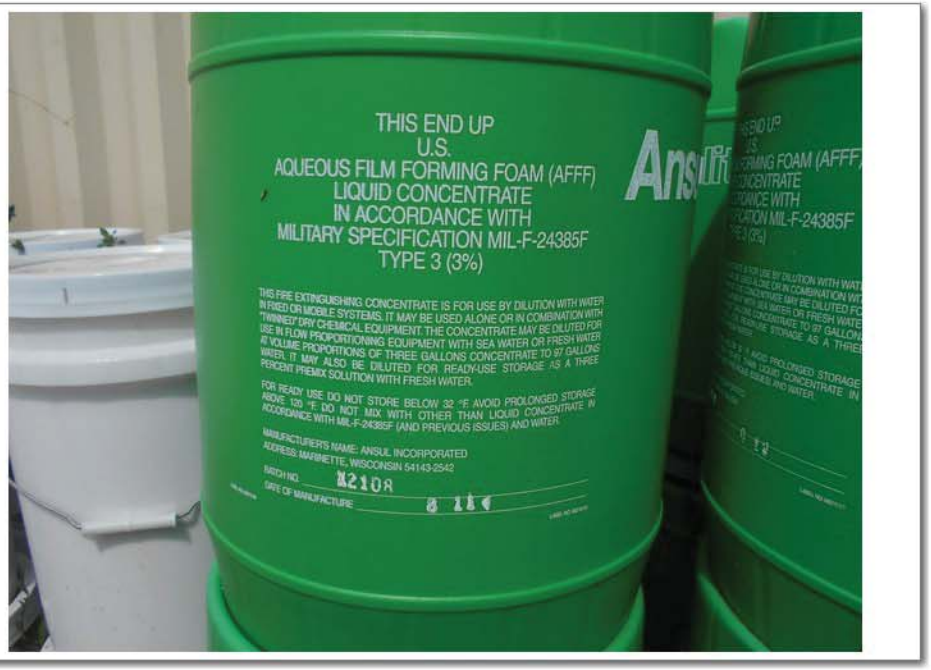
MCBH Kaneohe Bay B5069 unlabeled AST / 2016-03-29 13:10



MCBH Kaneohe Bay B6082 AFFF 5gal FEECON 2013 whtred (2) / 2016-03-22 10:35

MCBH Kaneohe Bay B6082 AFFF 5gal FEECON 2013 whtred (3) / 2016-03-22 10:35

MCBH Kaneohe Bay B6082 AFFF 5gal FEECON 2013 whtred / 2016-03-22 10:35



MCBH Kaneohe Bay B6082 AFFF 5gal green 2011 / 2016-03-22 10:35

MCBH Kaneohe Bay B6082 AFFF 5gal green 2012 / 2016-03-22 10:35

MCBH Kaneohe Bay B6082 Deteriorated labels 5gal wht drums / 2016-03-22 10:38

MCBH Kaneohe Bay B6082 Exterior / 2016-03-22 10:34

MCBH Kaneohe Bay B6082 fire vehicle w AFFF / 2016-03-22 11:23

MCBH Kaneohe Bay B6082 humvee w AFFF / 2016-03-22 11:23

MCBH Kaneohe Bay B6082 Pallets of AFFF exterior / 2016-03-22 10:35

MCBH Kaneohe Bay Fuel division - uses Halon / 2016-03-29 11:03

MCBH Kaneohe Bay Fuel division / 2016-03-29 11:03

Appendix D:
Visual Site Inspection Logs (Field Logbook)

VISUAL SITE INSPECTION LOGS (FIELD LOGBOOK)

The following field logbook pages are not applicable to the sites in this preliminary assessment and are therefore intentionally excluded from this appendix:

- Pages 4-14
- Pages 17-21
- Pages 26-36

CTO CIV 44: PFCs PA/SI

COMPOSITION

NAME WILLIAM STOHLER

SUBJECT PROJECT MANAGER

E-MAIL [redacted]

100 Sheets (200 Pages)
9¾" x 7½" (24.7 cm x 19.0 cm)

iScholar®
NEW YORK

REWARD IF FOUND

SEWN PAGES

WIDE RULED

AECOM FIELD PERSONNEL

[redacted]

[redacted]

[redacted]

NAVY PERSONNEL

[redacted]

(iii)

SUBCONTRACTOR PERSONNEL

3/22/16

7[45] [redacted] leave office and head to NCBH Fire station

8[20] Arrive at Fire Station and conduct tailgate safety briefing

8[40] Leave Fire Station and head to Facilities Bldg 242

8[42] Arrive at Bldg 242 to conduct interview with [redacted], electrical systems inspector Hangars never had AFFF fire suppression systems, fire pump (water) installed after NAVFAC took over / post BRAC

[redacted] spoke with [redacted] Airfield Operations [redacted], [redacted] said to check with crash crew and Hangars 1-5 for AFFF usage. Crash crew is located at Bldg 6822.

9[01] Leave Bldg 242 head to Bldg 6822

9[22] Arrive at Bldg 6822

5068 has AFFF, warehouse for Crash control [redacted]

Talked with materials chief, took us to Bldg 5068, 20 5 gallons of new AFFF, 5-5 gallon AFFF from 1980s, 16-5-gallon, 1-5 gallon

Anarlite, & 55-gallon drums of AFFF, Manu
facturing date unknown

[redacted]

10[32] Walk to Bldg 6082

~~18+30 = 48 5-gallon jugs~~ CA 3/22/16

45+12+18=75 5-gallon green jugs, manu 20

$\frac{2}{3}\frac{17}{51}$ +4 =55 5-gallon jugs

8 unknown 5-gallon buckets

10[40] Leave 6082 and head to Bldg 373

10[54] Arrive at Bldg 373

New unit, no use of AFFF as of date, Ward

Bldg 6082

11[30] Leave Bldg 373 and break for lunch

12[10] End lunch and head to Fire Training Area

No road, need to walk, right next to flight line and runway. Unsure of notification requirements so left site.

12[45] Headed back to office

13[30] Arrived back to office

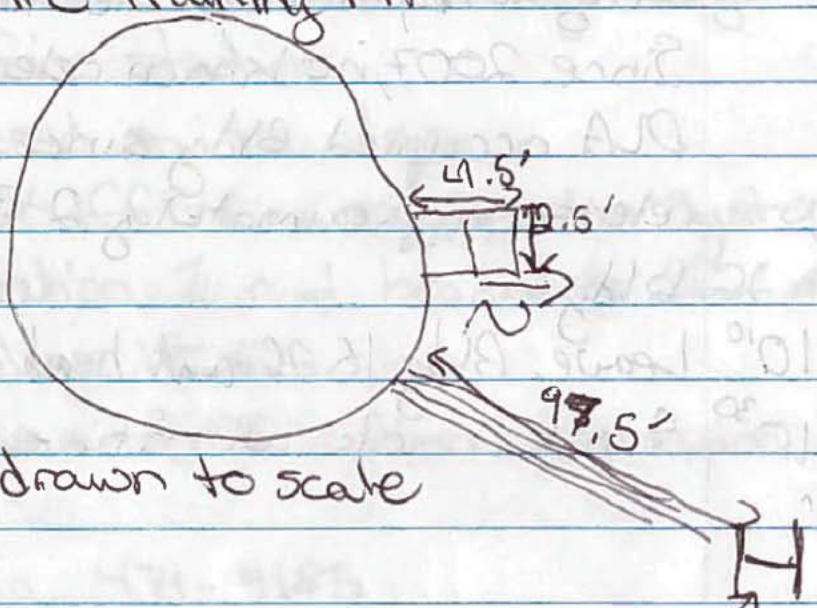
3/22/16

3/29/16

7[15] [redacted] Leave office and head to MCBH

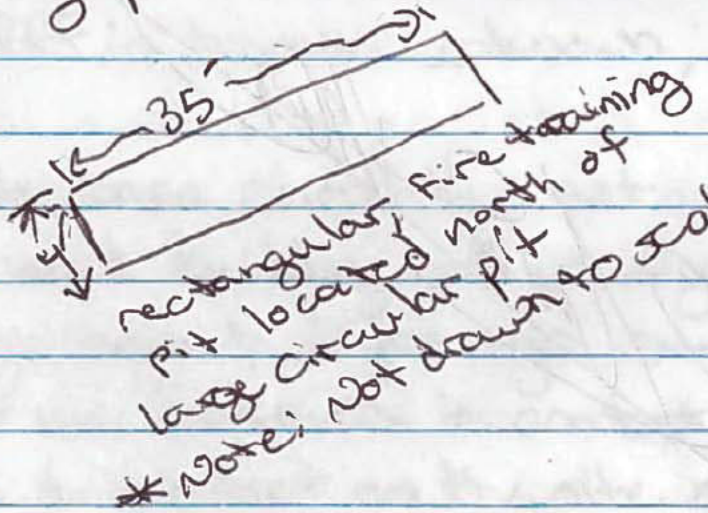
8[10] Arrive at Bldg 5068 to meet [redacted] for escort to fire training pit, conduct Tail gate briefing

8[45] Arrive at Fire Training Pit



*Not drawn to scale

Burned out air-plane located south of training pit



2 monitoring wells present at the site

1 upgradient, 1 downgradient

9[05] Leave fire training pit and head to Hangar 1

9[25] ~~Head~~ Arrive to hangar 1 3/29/16

No Afff system, only water

9[45] Leave Hangar 1, walk to Hangar 2

10[00] Arrive at Hangar 2

Has AST located inside Hangar 2, marked as uniformed pressure vessel

Sprinklers located inside hangar

10[20] Leave Hangar 3, get gas in vehicle and head to 5

10[30] Arrive at Hangar 5

Has water suppression system

10[40] Leave Hangar 5 and head to hangar 4

10[45] Arrive at Hangar 4,

Has water fire suppression system

10[48] Leave Hangar 4 and head to Hangar 3

10[5?] Arrive at Hangar 3, water fire suppresion system

10[56] Leave Hangar 3 and head to AST's

11[00] Arrive at AST farm, fuel Division [redacted], using Halon fire extinguisher

11[15] Break for lunch
12[15] Head to Corrosion Control Hangar Bldg 5069
12[47] Arrive at Bldg 5069
No one present inside Bldg will contact [redacted] for POC.
Opened as Paint Shop 4 Dec 2014
13[15] Leave Bldg 5069 and walk to Bldg 375
13[16] Arrive at Bldg 375
Sprinkler system, installed in 1942, last tested in 1987

[redacted]

AFFF at 5069 has gone off in last yr
AFFF at least 10 yrs, 32,000 gallon tanks x 2

[redacted]

13[45] Leave Bldgs 5069 & 375, head to Bldg 243
14[15] Arrive at Bldg 243 need contact for Bldg
14[26] Leave Bldg 243 and head to Bldg 6471
14[30] Arrive Bldg 6471, water pump facility
No AFFF

25

3/29/16

1431 Leave Bldg 6471 and head to 6474 and 6407 and 6474

1440 Arrive at Bldg 6474 and 6407

No Afff

1445 Leave Bldg 6407 and 6474 head to Bldg 5055

1450 Arrive at Bldg 5055

No Afff

1452 Leave Bldg 5055, head to 6697

1500 Arrive at 6697

No Afff, [redacted]

1510 Leave Bldg 6697 and head back to Office

1540 Arrive back at office

3/29/16

11/8/2017

0800 [redacted] depart office

0835 Arrive at MCBH - pass ID to get car pass

0910 Arrive at fire station; conduct Health and safety meeting

0920 Met with [redacted];
January the station will be remodeled and trailers will be added to site
- drains in apparatus deck; unsure where they disperse to or if they are plugged
- vehicles washed in front of station
- Photo 1: potentially collect soil samples at drain by FS/tree
- move site closer to corner
- 2 drains in fire station bay; unsure where they drain to

0950 Depart for building 6822

1000 Arrive Building 6822 - Meet [redacted]

1010 Indoor drainage only for washing machine
Each bay has drainage vent but vehicles not washed in bays
- outdoor drain adjacent to 3085 shed

-unsure where drain goes; does not enter ocean
- outdated maps; 6822 in different location now
- propose a mw near fence/car line on west side
- additional mw within MWSD24 MAG24 fence
- most people enter turnstyle around 0730

1050 -enter airfield storage shed/warehouse
-required to have 250 gallons AFF in storage at all times

1110 -go to proposed MW4 on airfield

1125 go to RMW-02 proposed location

1135 go to RMW-01 proposed location; construction items present around site

1145 Arrive RMW-03

1150 Cannot access RMW-05 due to construction

12^{30} Head Back to office

12^{51} Arrive back at office

7/8/20

Appendix E:
Response to Comments

Project Title: Draft Preliminary Assessment
Potential Per- and Polyfluoroalkyl Substances Sites
Marine Corps Base, Hawaii and Camp H.M. Smith Oahu, HI, Basewide, April 2019
Reviewer: Ms. Maria Eloisa Q. Reyes, Ph.D., Hawaii Department of Health
Date: December 27, 2019

Item	Section No.	Comment
1	2-5	More information is needed to exclude Camp H.M Smith Bldg. 612 Fire Station #8 and Manana Housing Bldg. 68 Fire Station #5 from further evaluation in a Site Investigation. It is not clear why these two sites were assigned Category D in this Preliminary Assessment evaluation. Based on the four categories created to enable site prioritization, these two sites fall under Category B.
Response: The two listed fire stations stored limited quantities of AFFF. Per the interview record for Bldg. 612, Question 1, there "have been no foam releases on the areas surrounding the fire station." Per the interview record for Manana Housing, Question 2, "There has not been any foam testing or release of foam around the fire station, as it is strictly forbidden." Based on updated guidance, Camp Smith Bldg. 612 Fire Station #8 will be included in Group B according to information from the Federal Fire Department which states that AFFF is refilled at this fire station and grassy areas are present surrounding the fire station where AFFF could infiltrate. Manana Housing Bldg. 68 Fire Station #5 will be excluded from Group B based on the absence of grassy areas. The fire station only includes a concrete parking area.		
2	Appendix A	More information is needed to exclude Bldg. 1168 Aircraft Fire and Rescue Station on B Street from further evaluation in a Site Investigation.
Response: Bldg. 1168 was demolished and a new facility was built. The new facility is the current Bldg. 6822 on our list as a Category B site. The area where former Bldg. 1168 stood will be investigated as part of the investigation for Bldg. 6822.		
3	General	More information is needed to exclude Bldg. 6082 Outdoor Pallet of AFFF from further evaluation in a Site Investigation. Also, please clarify the statement "AFFF is newer formula that does not contain PFAS."
Response: The AFFF formulation that was stored at the site, during the time of the VSI, did have PFAS according to updated DoD guidance. The findings for Bldg. 6082 were updated to remove the text referencing the newer formulation. Based on the evidence, AFFF at this site was only stored. As of 2021, the AFFF was removed from the site. There is no evidence of release, and therefore this site was assigned into Group D. As such, this site was not recommended for further evaluation at this time.		
4	General	It is not clear why Personnel Interviews were only conducted for key portions of MCBH and Camp H. M. Smith and not for the associated annexes at Manana Housing, Marine Corps Training Area Bellows, and Puuloa Range Training Facility.

Responses:

Manana Housing: This is a Navy housing complex that does not include any industrial buildings, with the exception of the fire station. The interview log for Manana Housing is the first one included in Appendix B, Interviews.

Marine Corps Training Area Bellows (MCTAB): This is a training area located at the former Bellows Air Force Station that is run by staff from MCBH and is only utilized on a part-time basis. MCTAB does not have a fire station and does not utilize AFFF. None of the buildings identified at the facility are known/suspected to contain PFAS. The staff conducting the PA has firsthand knowledge of the facility and has visited/worked at the site. A crash response from 2015 was added to the list of sites based on new knowledge of AFFF formulations that was not available when the PA was initially conducted.

Puuloa Range Training Facility: This facility includes small arms ranges, barracks, and training facilities. None of the buildings identified here are known/suspected to have contained AFFF, and no known releases have occurred on-site.

Project Title: Draft Preliminary Assessment
Potential Per- and Polyfluoroalkyl Substances Sites
Marine Corps Base, Hawaii and Camp H.M. Smith Oahu, HI, Basewide, April 2019
Reviewer: Ms. Maria Eloisa Q. Reyes, Ph.D., Hawaii Department of Health
Date: December 27, 2019

Item	Section No.	Comment
5	General	It is not clear why Visual Site Inspections were only conducted at MCBH Kaneohe Bay and not at the associated annexes at Marine Corps Base Camp H. M. Smith, Manana Housing, Marine Corps Training Area Bellows, and Puuloa Range Training Facility.
Response: Visual site inspections were conducted only for sites/buildings where the PA screening process described in Section 2.2.1, maps, aerial photos, or interviews indicated that the site/building may meet the Category A through C descriptions (Groups A-C). The screening process/interviews did not identify sites of concern, and VSIs were not conducted at these facilities during the PA.		
6	General	Correct the label for Bldg. 4074 Fire Station #8 in Figure 2-1.
Response: Erroneous uses of Building 4047 were corrected to 4074 on Figure 2-1 and in several places on Figure 3-3.		
7	General	It is not very clear how the list of 1,261 base facilities was reduced to the six sites recommended for further evaluation in a Site Investigation. Not much information was given on how the list of sites in Appendix A Building Screening Tables was generated.
Response: The building lists included in Appendix A were provided to the contractor performing the PA by the USN or MCBH for each installation. These lists were screened in accordance with the description in Section 2.2 (Approach). Specific key words and phrases used in the screening are listed in Section 2.2.1. Subsequent to the screening of the building lists, facility maps were reviewed, installation environmental coordinators were consulted, and interviews were conducted with managers/responsible parties for buildings/areas of interest (highlighted rows in Appendix A) as available and appropriate. For sites/buildings potentially identified as Group A and B sites, visual site inspections were conducted to confirm site details and aid in site inspection work planning.		
8	General	Lists of Category B sites include Bldg. 5068 Aircraft Rescue and Firefighting Shed or Bldg. 5058 Crash Crew Storage. At one instance, Bldg. 5068 was referred to as “Crash Crew Storage”. Please clarify.
Response: For consistency, the nomenclature for Building 5068 was revised to “Crash Crew Storage,” and the term “Aircraft Rescue and Firefighting Shed” was eliminated. This storage building is a shed, constructed in 1991 for aircraft rescue operations.		
9	Section 3.4.6.2	The ecological, terrestrial exposure to subsurface soil may not be an incomplete pathway for plants. Plant roots are found at great depths. It may help if “surface soil” and “subsurface soil” are defined.
Response: The following additional rationale, which was included in the *Draft Site Inspection Work Plan* conceptual site model, was added to this section: “Plants may send roots into subsurface soil (deeper than 6 inches) and some invertebrates burrow into deeper soil. However, most nutrient uptake by plants and most foraging by invertebrates are assumed to occur within the upper bioactive layer of soil (from the surface to 6 inches below grade).”		